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OF THE

UNITED STATES GEOLOGICAL SURVEY

VOLUME XV—PLATES



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plates

UNITED STATES GEOLOGICAL SURVEY

J. W. POWELL, DIRECTOR

THE POTOMAC

OR

YOUNGER MESOZOIC FLORA

BY

WILLIAM MORRIS FONTAINE



WASHINGTON
GOVERNMENT PRINTING OFFICE
1889

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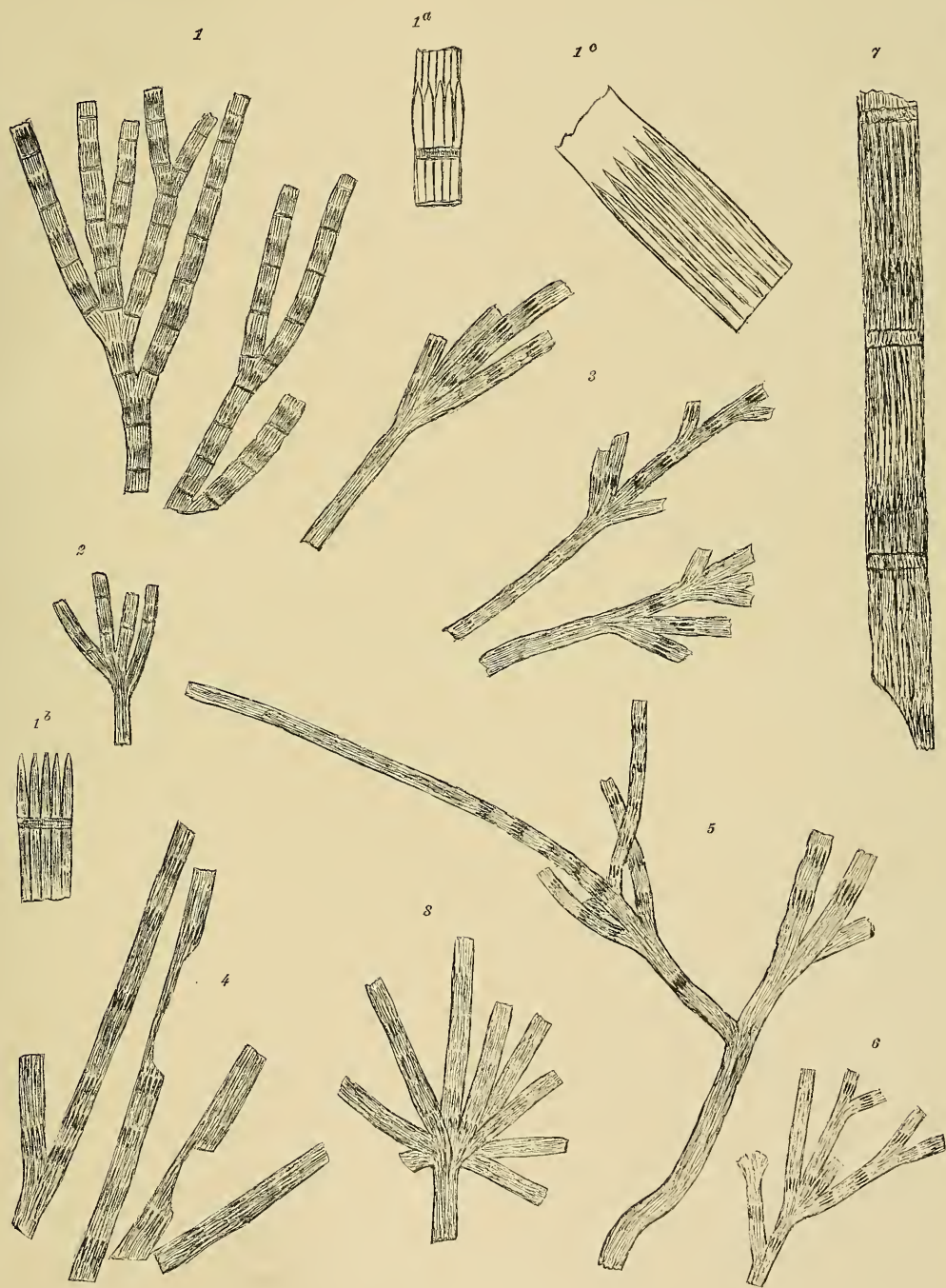


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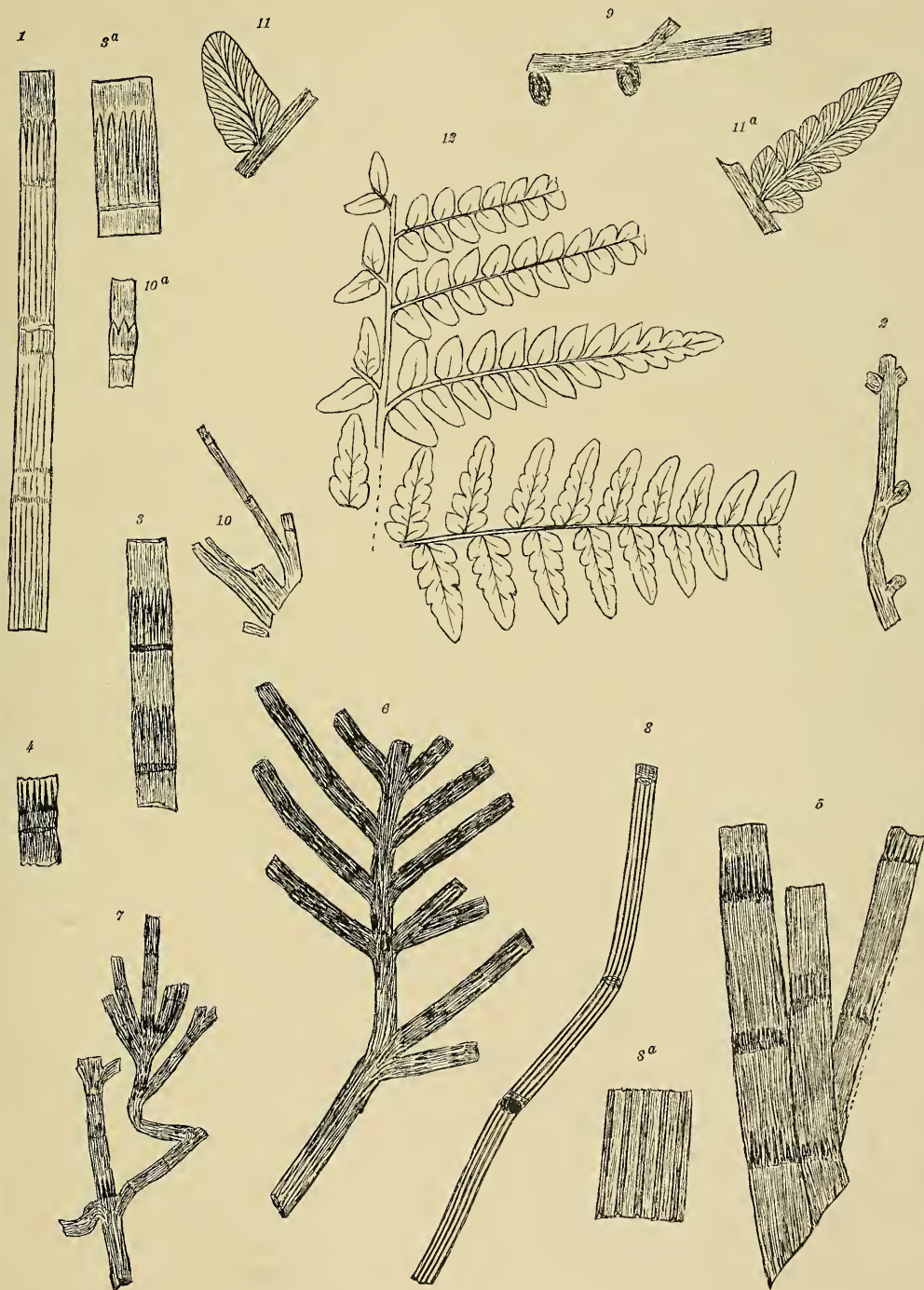


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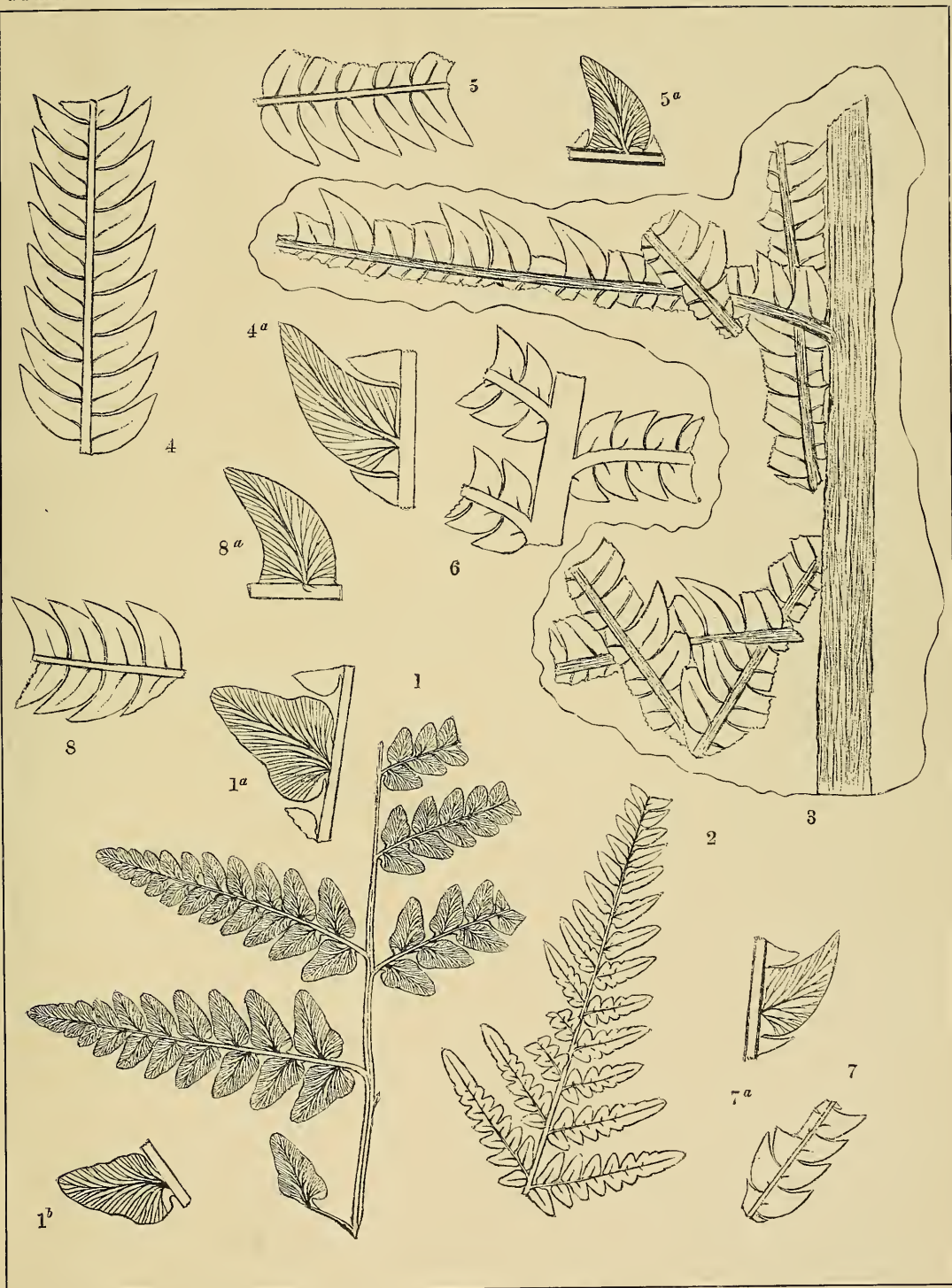


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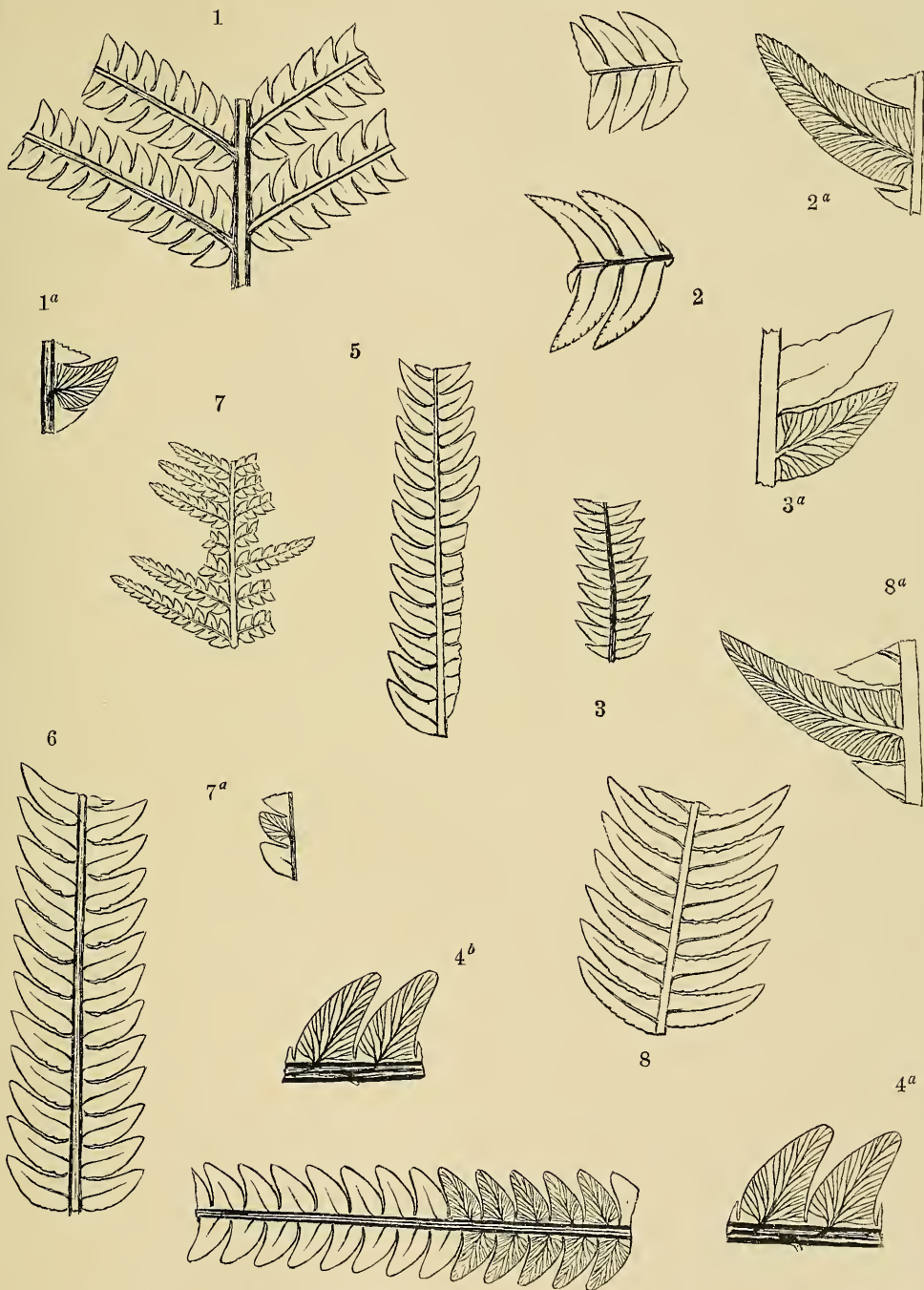


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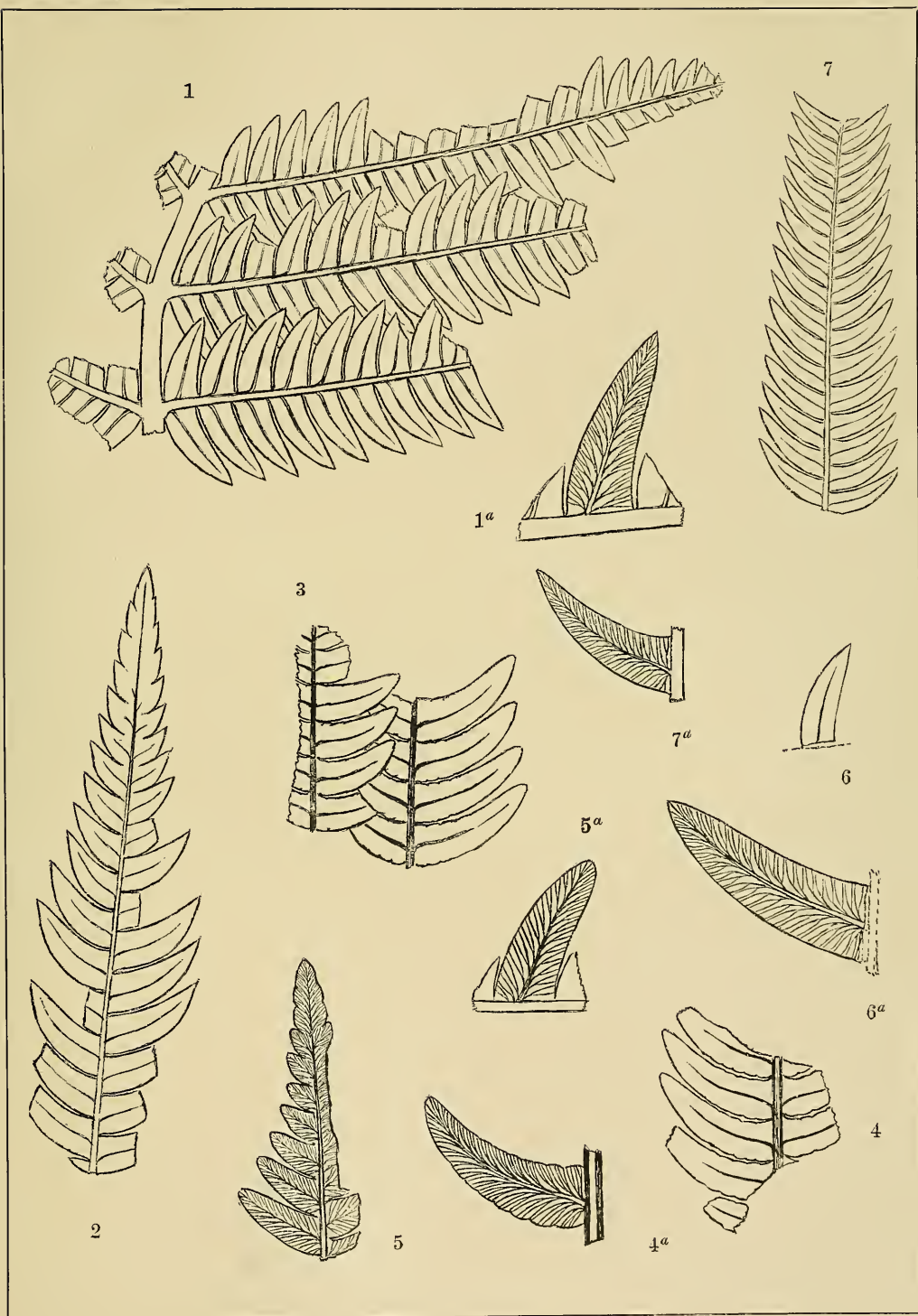


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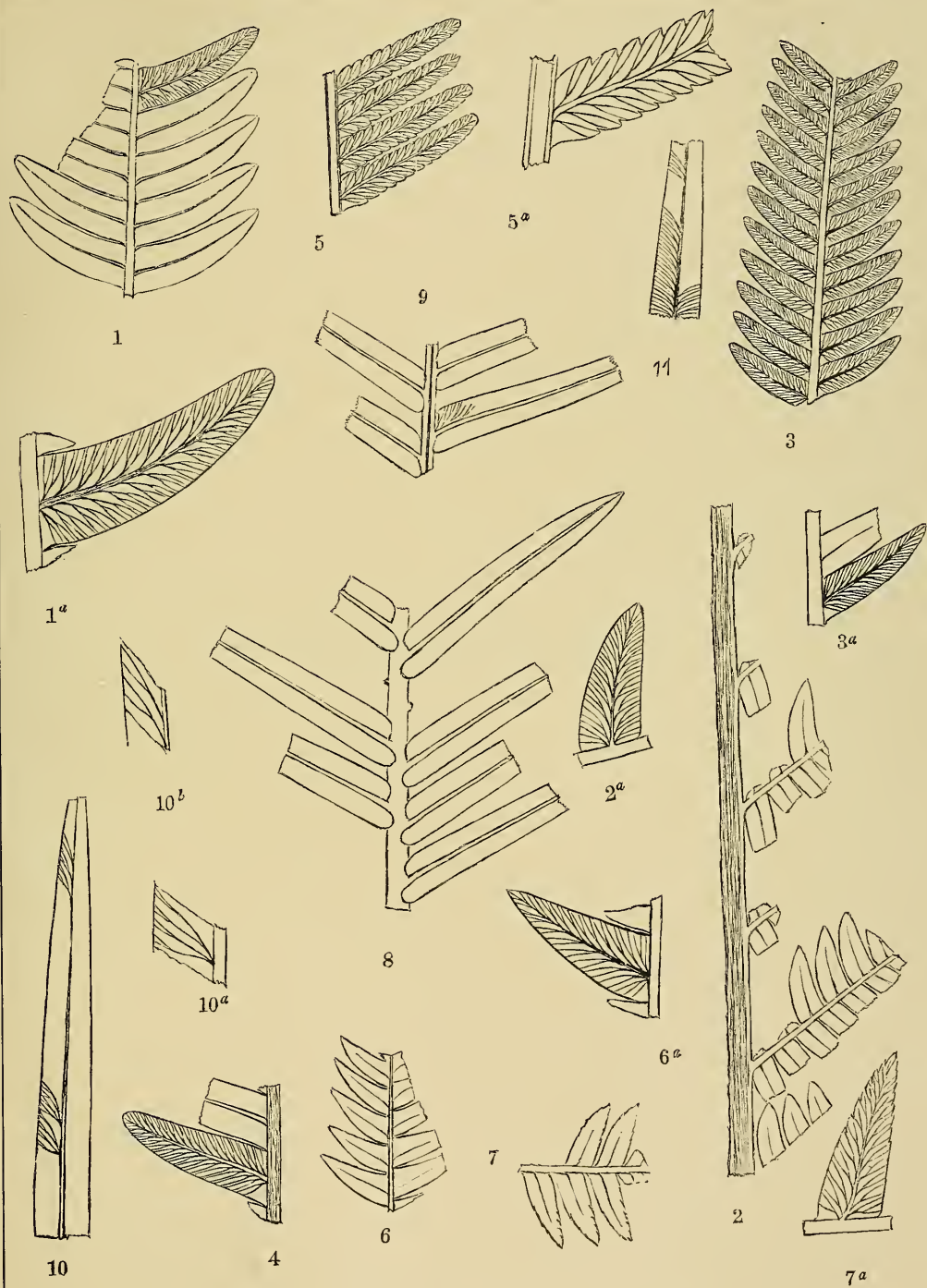


PLATE VIII.

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FIGS. 1-7. <i>PECOPTERIS VIRGINIENSIS</i> , sp. nov.	82
1. Pinna with unusually long pinnules, from Fredericksburg	82
1 ^a . Pinnule of 1 magnified to show nervation	82
2. A compound pinna, or a part of the frond, from road-side near Potomac Run.	82
2 ^a . Portion of a pinnule from the lower part of the specimen magnified	82
2 ^b . A pinnule from the upper part magnified	82
3. Pinna from Fredericksburg	82
3 ^a . Pinnule of 3 magnified to show nervation	82
4. Pinna from Fredericksburg	82
5. Upper portion of a pinna from 72d mile-post, near Brooke	82
6. Pinna from road-side near Potomac Run	82
7. Pinna from road-side near Potomac Run	82
7 ^a . Pinnule of the same magnified to show nervation	82

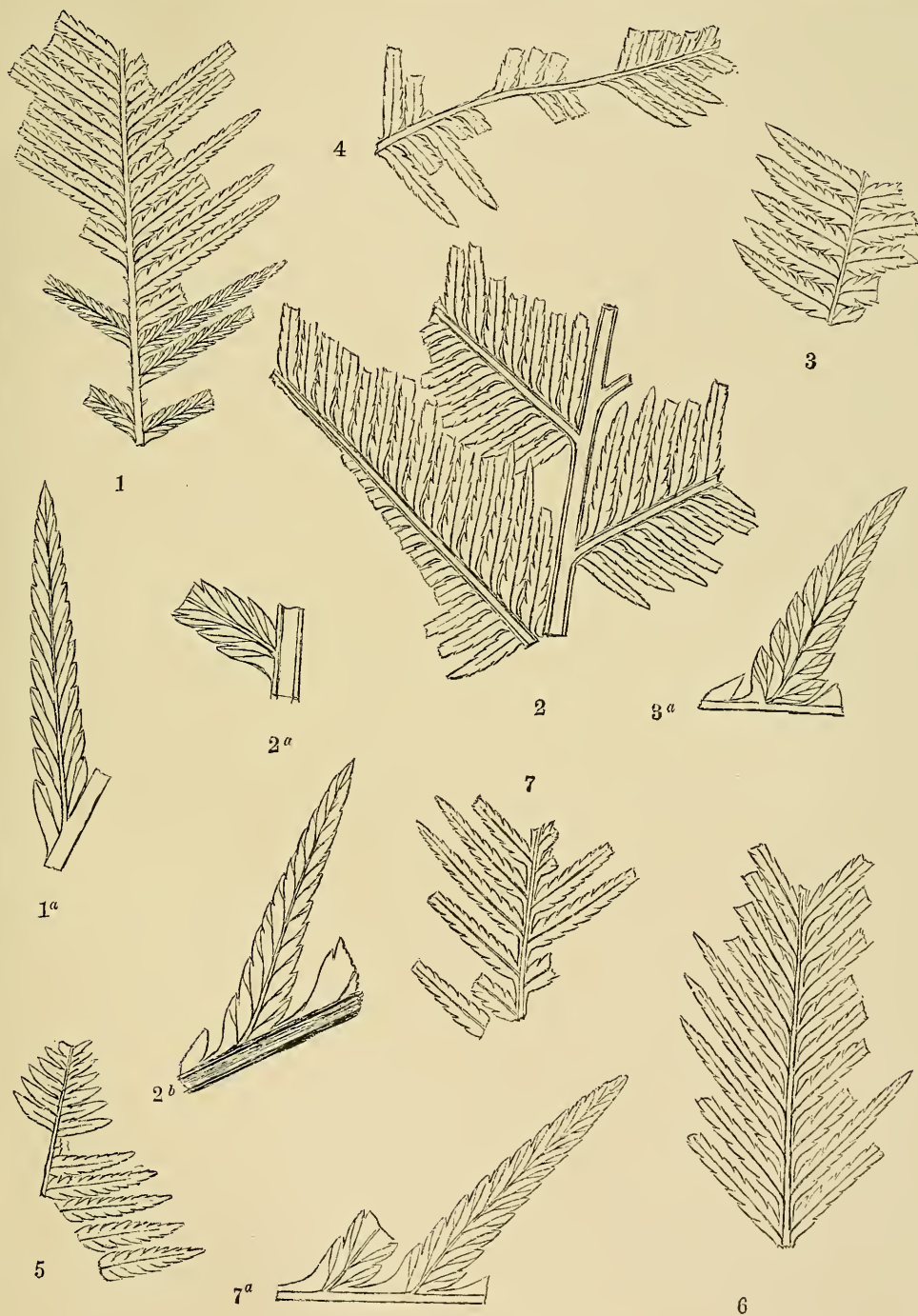


PLATE IX.

PLATE IX.

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1. Compound pinna from Fredericksburg.	82
1 ^a . Pinnule of 1 magnified to show nervation.	82
2. Pinna from fishing hut above Dutch Gap Canal.	82
2 ^a . Pinnule of 2 magnified to show nervation.	82
3. Pinna from red clay ball in Dutch Gap Canal.	82
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7 ^a . Pinnule of 7 magnified to show nervation.	75
8. Portion of the frond or of a primary pinna.	75
8 ^a . Pinnules of 8 magnified to show nervation.	75
9. Portion of an ultimate pinna, with unusually broad pinnules.	75

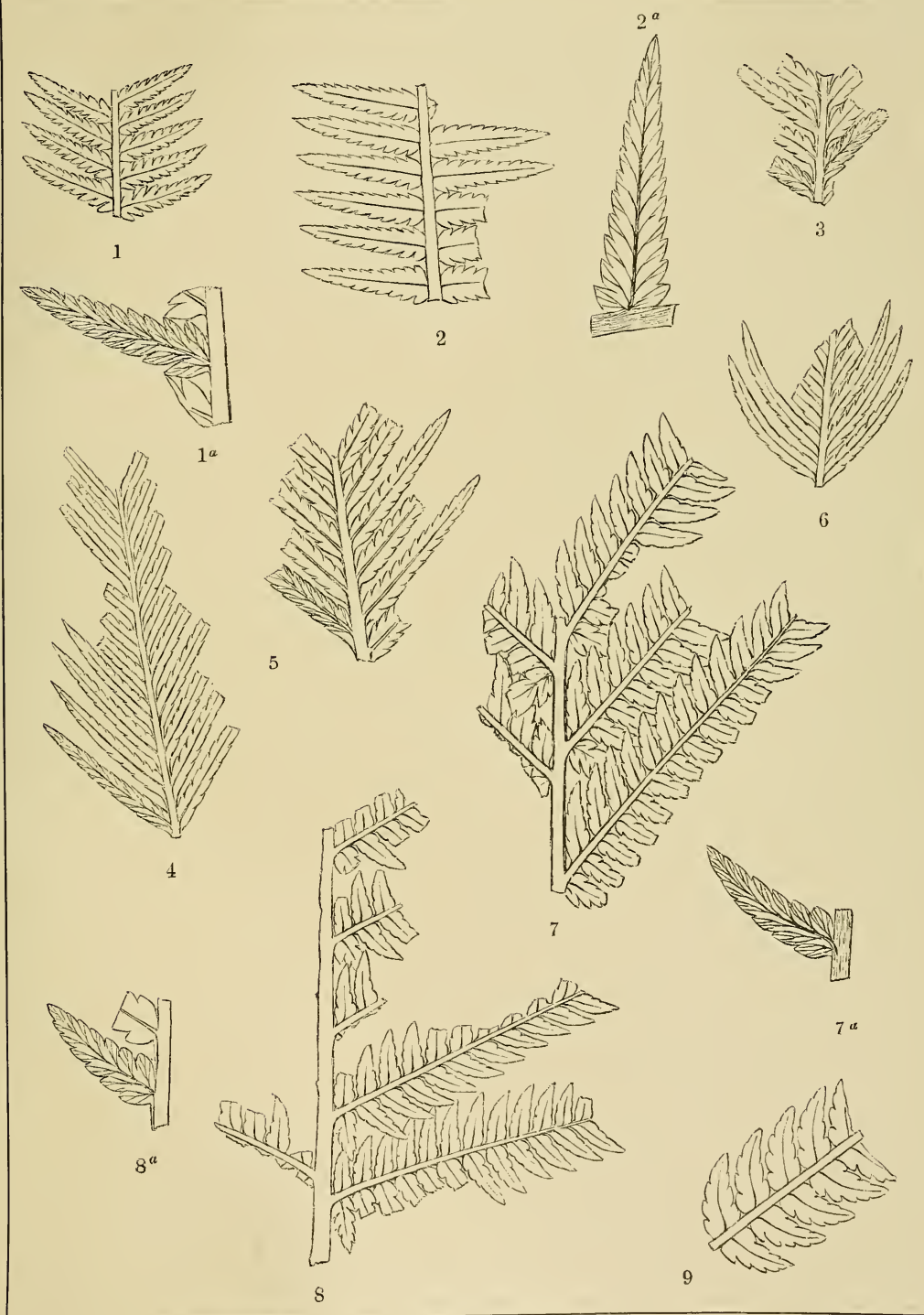


PLATE X.

PLATE X.

	Page.
FIGS. 1, 2. CLADOPHLEBIS CRENATA, sp. nov.	75
1. Portion of the frond or of a compound pinna.	75
1 ^a . Pinnule of 1 magnified to show nervation.	75
2. Portion of the frond, or of a compound pinna, with opposite pinnae; possibly a distinct species.	75
2 ^a . Pinnule from the upper part of 2 magnified.	75
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6. Several detached pinnae.	74
6 ^a . Pinnule of the same magnified to show nervation.	74
7. Pinna showing abnormal lateral nerves in the pinnules.	74
7 ^a . Pinnule of 7 magnified to show nervation.	74
FIG. 9. ASPLENIUM DUBIUM, sp. nov. ?.....	109
9. Small fragment of an ultimate pinna, a pinnule of which is magnified in 9 ^a	109

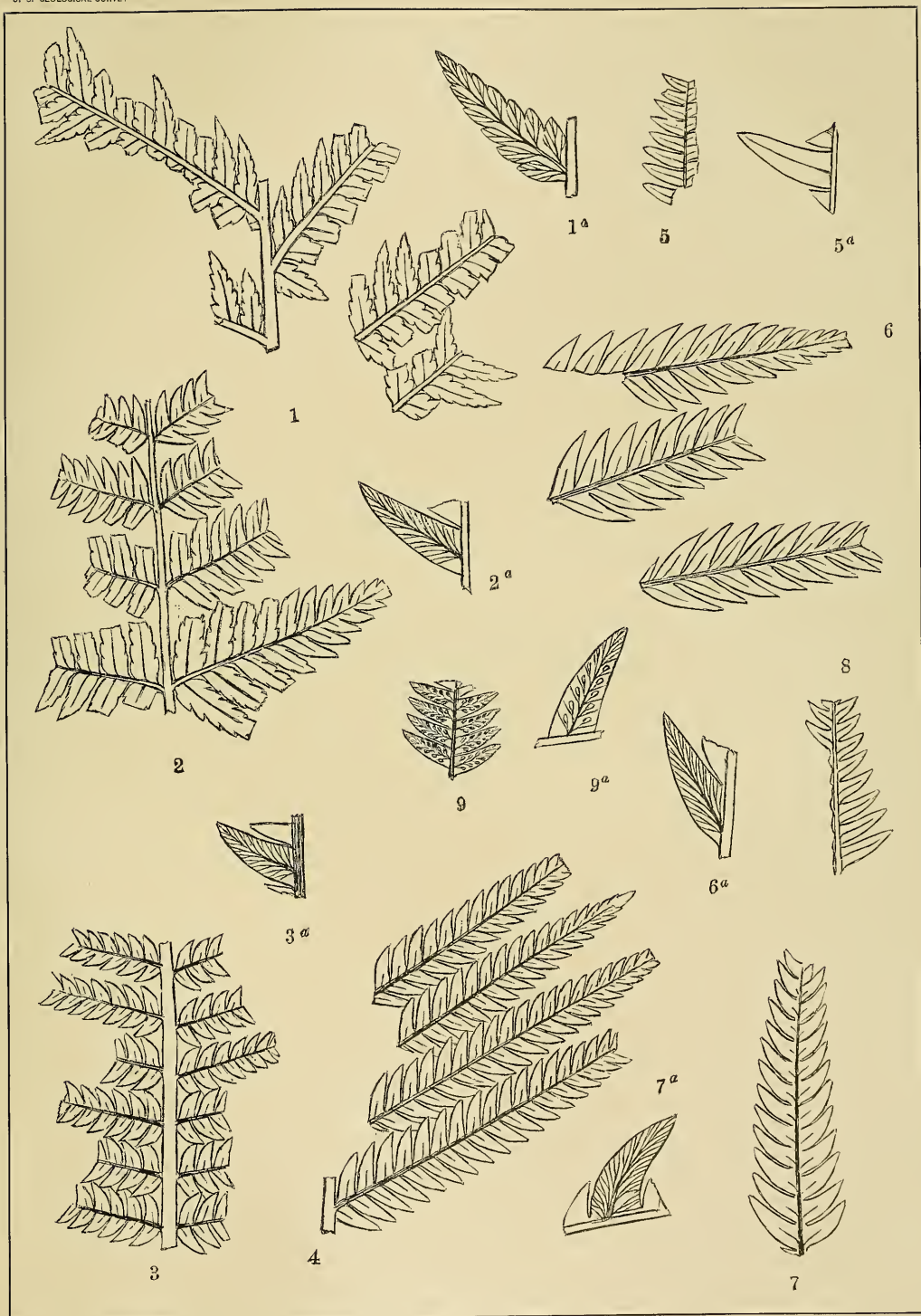


PLATE XI.

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1. Portion of a compound pinna or of the frond.	94
1 ^a . Pinnule of 1 magnified to show the nervation.	94
2. Portion of an ultimate pinna showing sori.	94
2 ^a . Pinnule of 2 magnified to show the sori.	94
2 ^b . A sorus still more magnified.	94
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4. Fragment of an ultimate pinna with distant pinnales.	94
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8. Portion of the frond or of a compound pinna.	74
8 ^a . Magnified pinnule of 8.	74

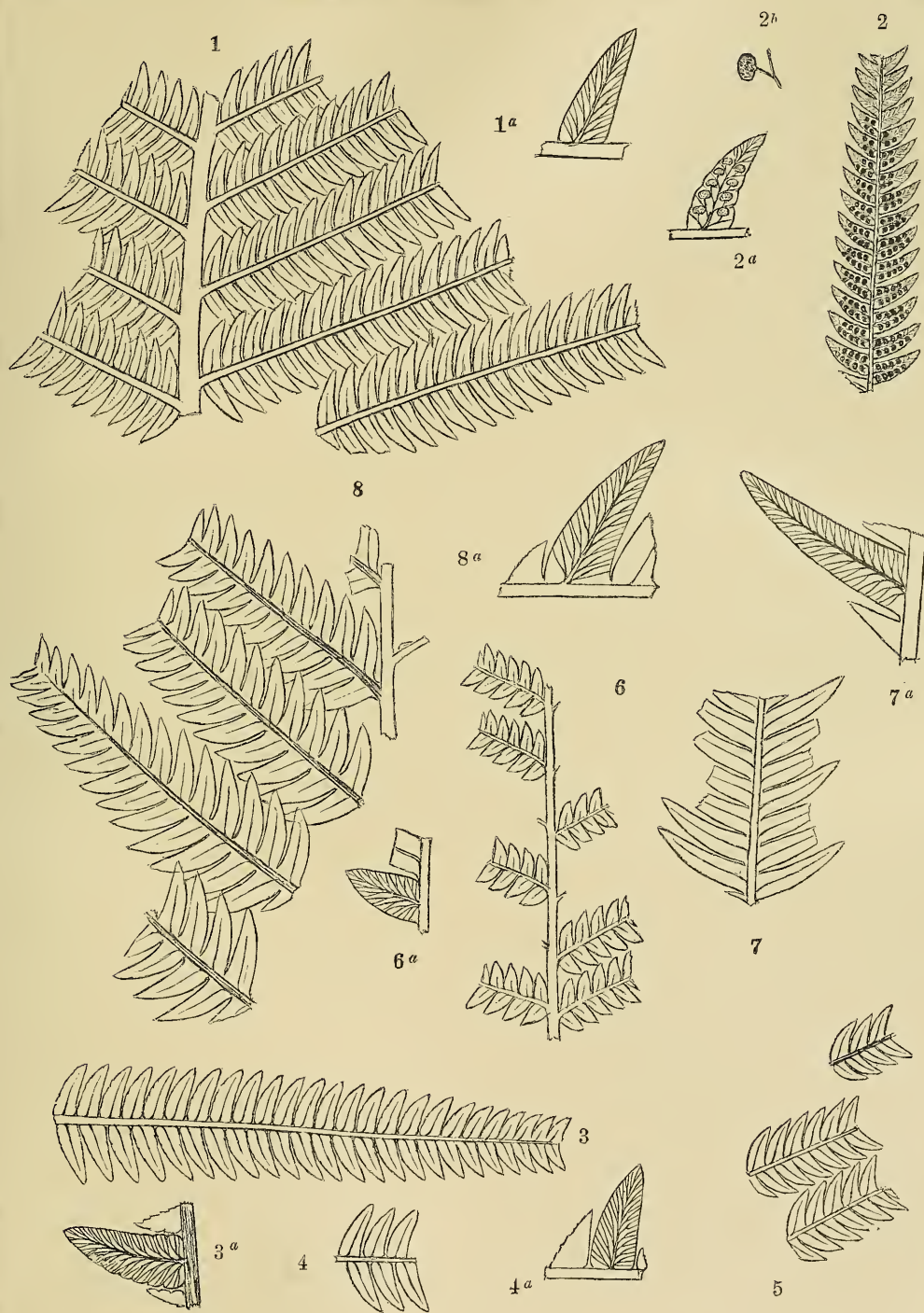


PLATE XII.

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1 ^a . Magnified pinnule from the lower part of 1, showing nervation	94
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6. Fragment of a pinna with unusually long crenate pinnules, probably from the upper part of the frond	94
6 ^a . Pinnule of 6 magnified to show nervation	94

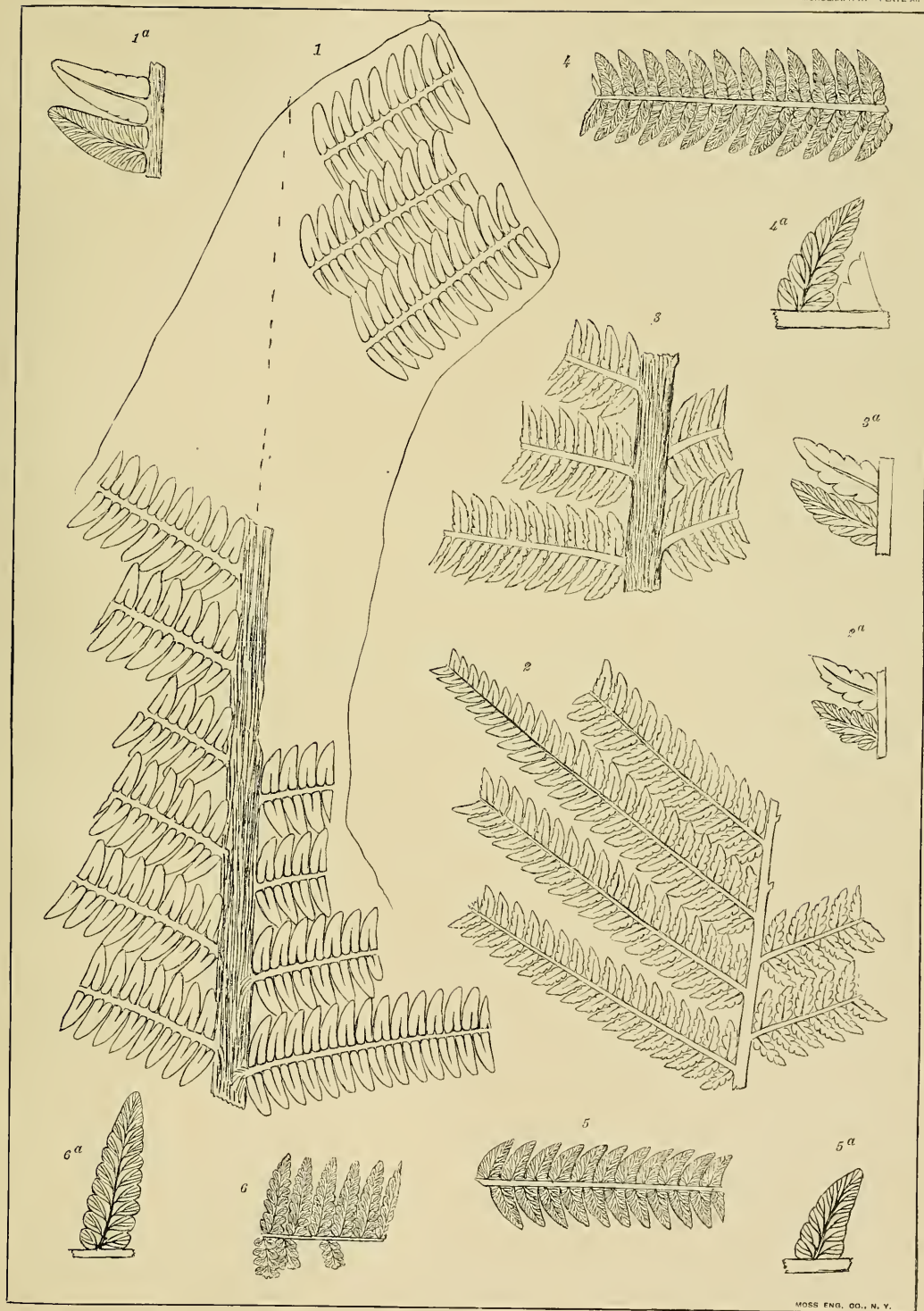


PLATE XIII.

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2. Small pinnules from the upper part of the frond	75
2 ^a . Pinnule of 2 magnified	75
3. Portion of a pinna	75
3 ^a . Pinnule of 3 magnified	75
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5. Detached pinnae	77
5 ^a . Pinnules of 5 magnified	77
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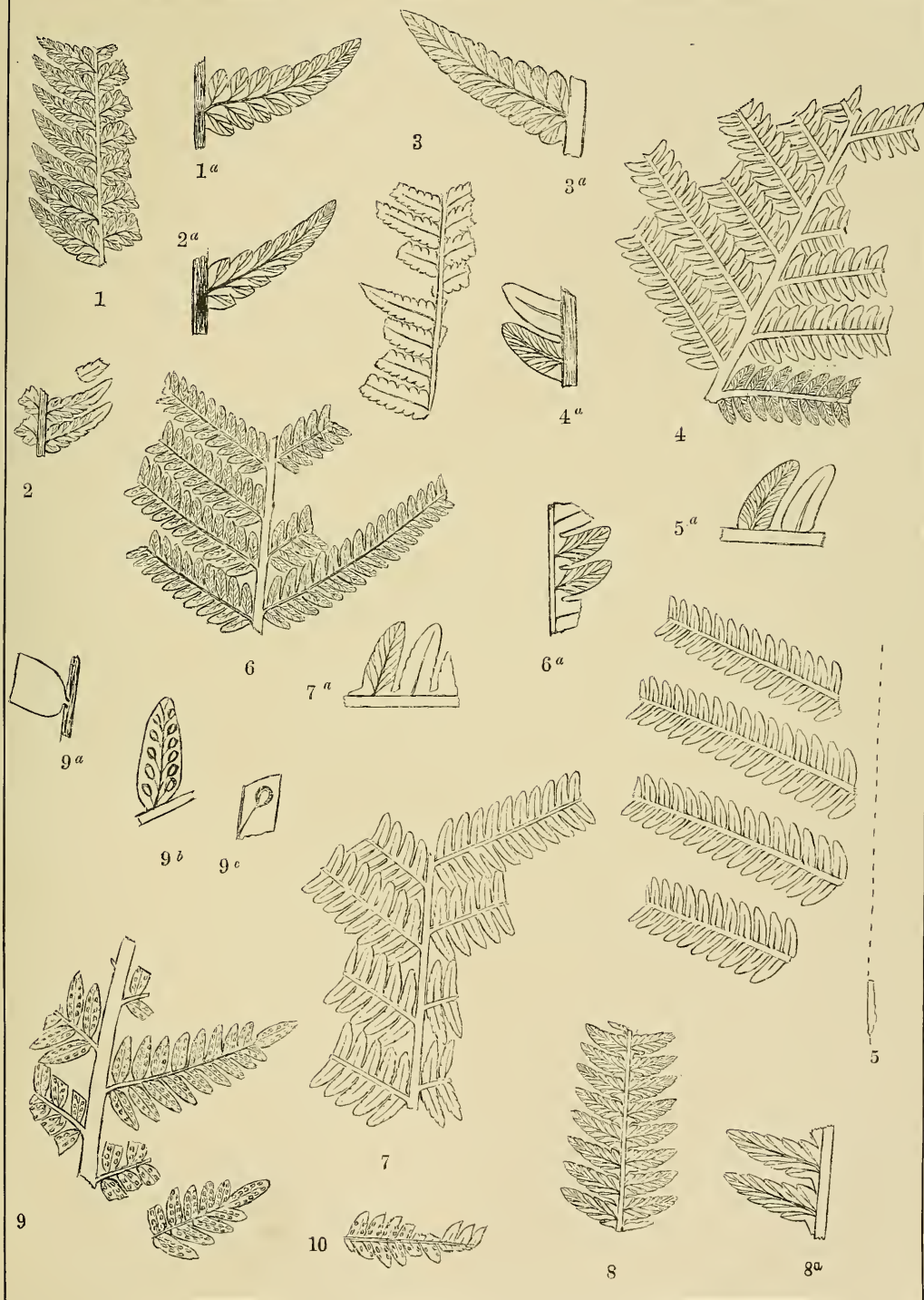


PLATE XIV.

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3. Summit of a secondary pinna	96
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8. Portion of an ultimate pinna.....	85
8 ^a . Pinnule of 8 magnified.....	85

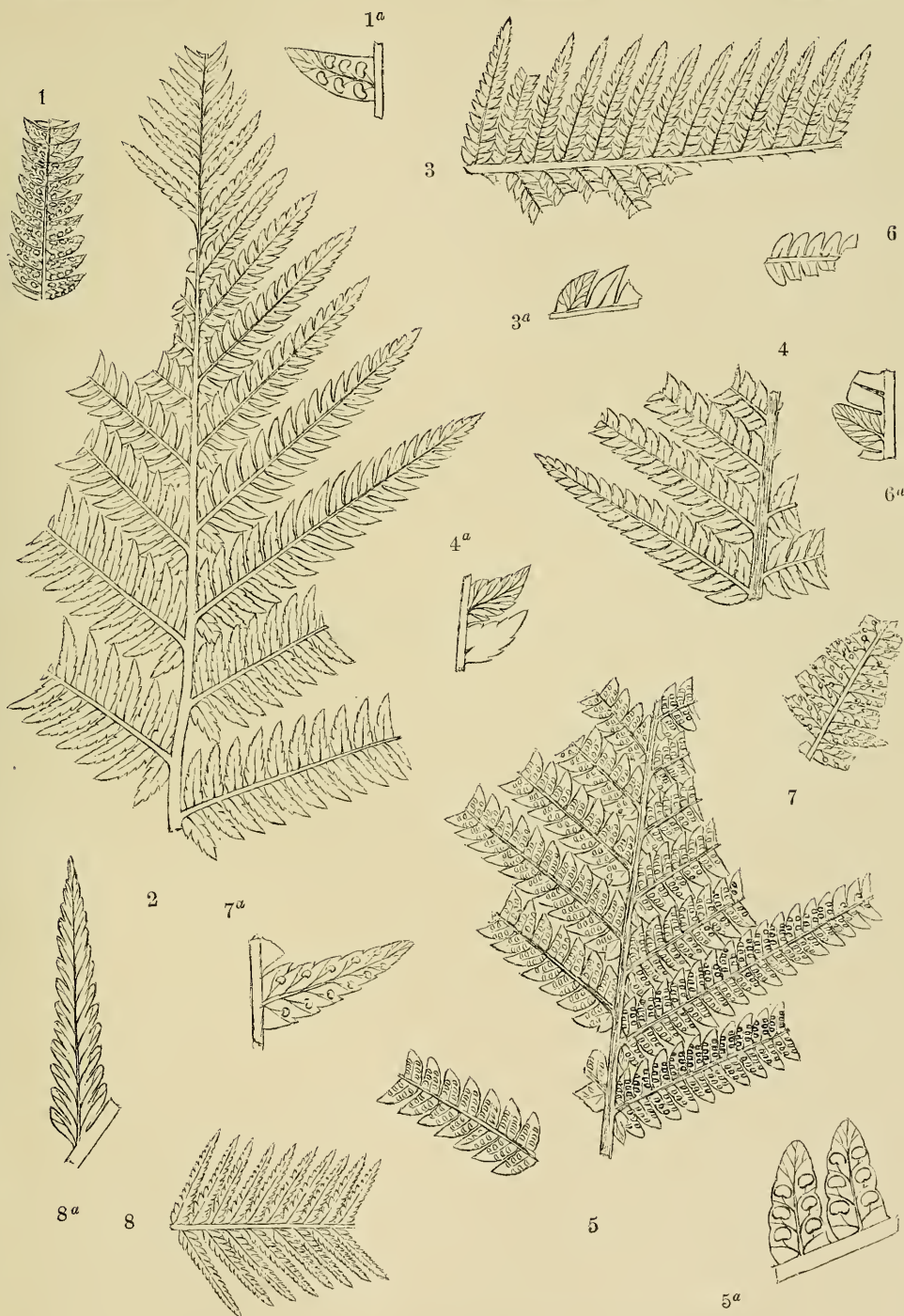


PLATE XVI.

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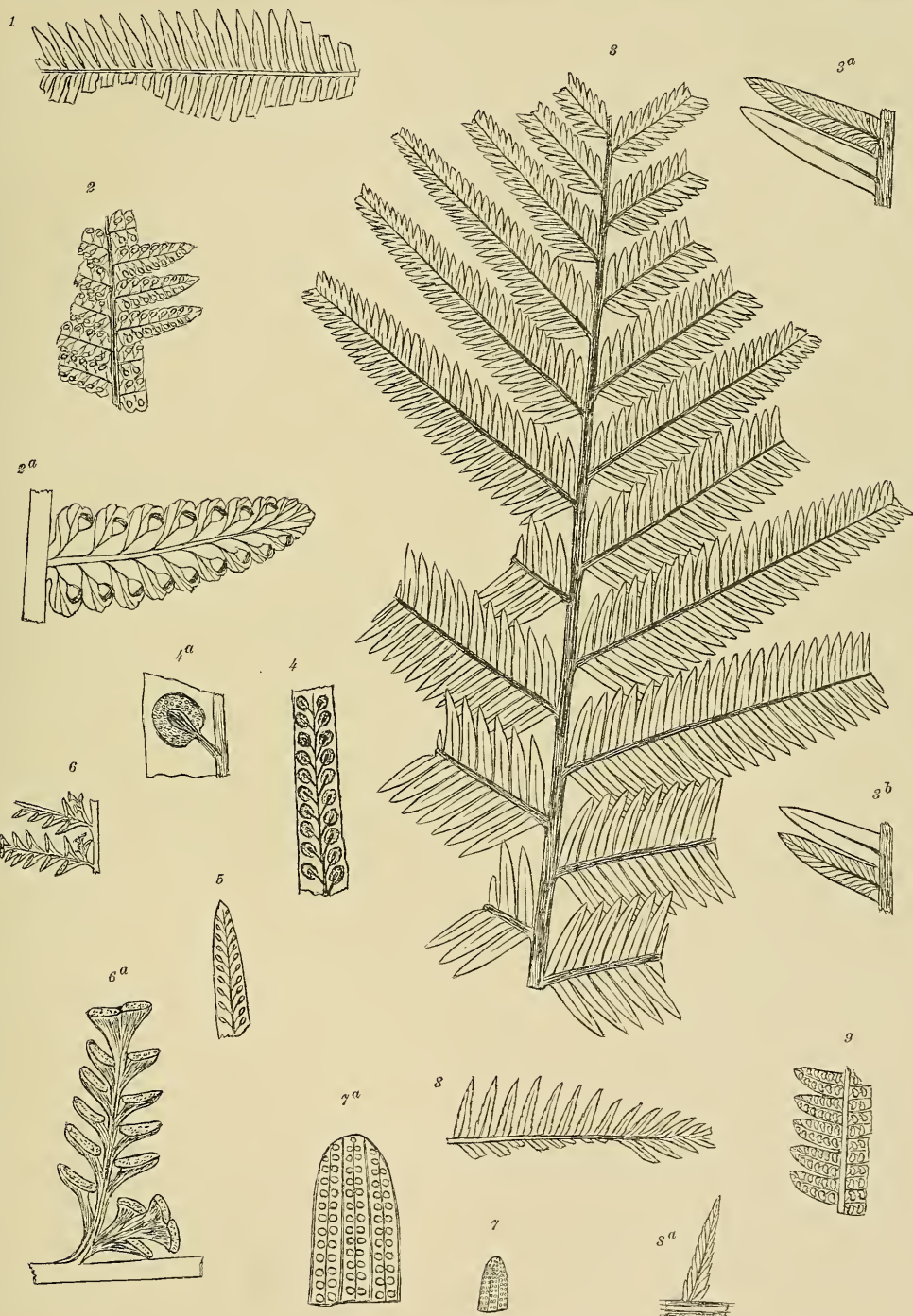


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6. Summit of an ultimate pinna	110
7. Portion of an ultimate pinna with broad-toothed pinnules.....	110

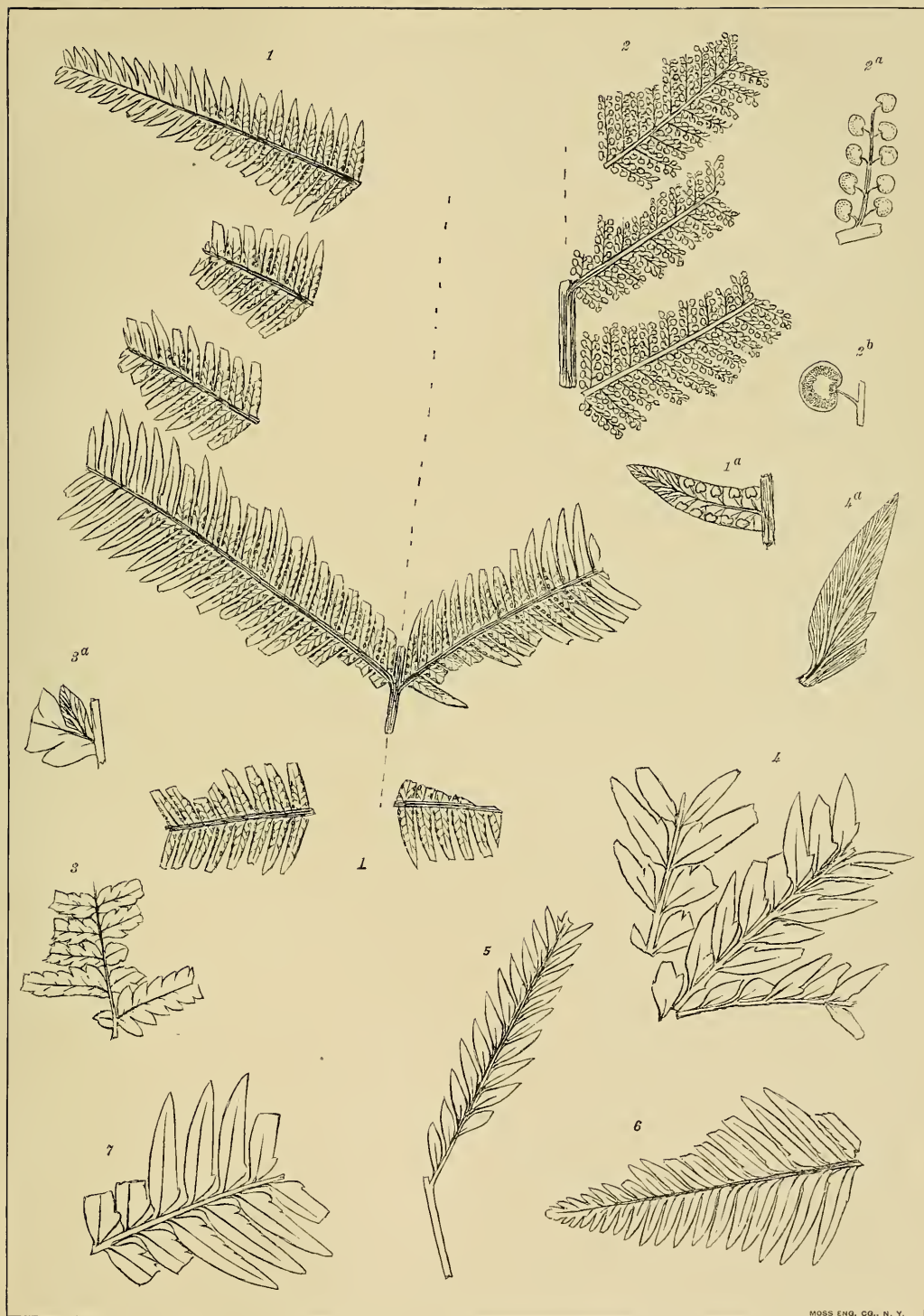


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1. Two compound pinnae.....	110
1 ^a . Portion of a lower pinna magnified.....	110
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1 ^c . Tip of a pinna magnified.....	110
2. Upper part of a compound pinna.....	110
2 ^a . Pinna of 2 magnified.....	110
3. Portions of two ultimate pinnae.....	110
3 ^a . Pinna of 3 magnified.....	110
4. Portion of the upper part of a primary compound pinna or of the frond.....	110
4 ^a . Portion of the same magnified to show nervation.....	110
5. Upper part of an ultimate pinna.....	110
6. Tip of a pinna from road-side near Potomac Run.....	110

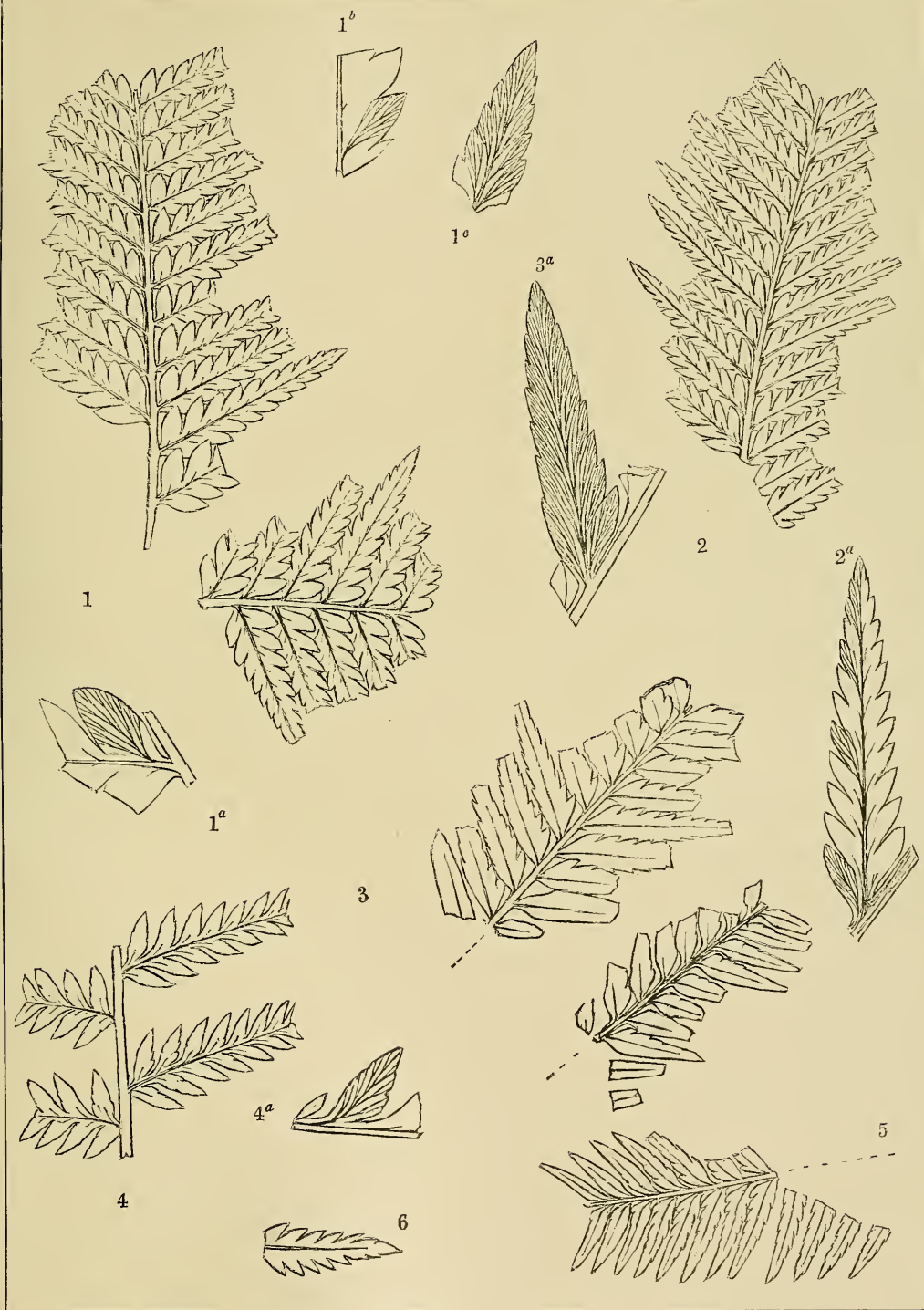


PLATE XIX.

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FIG. 1. CLADOPHLEBIS CRENATA, sp. nov	75
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1 ^a . Pinnule of 1 magnified.....	75
FIG. 2. CLADOPHLEBIS, sp. ?	78
2. Several detached pinnules	78
2 ^a . Portion of a pinnule magnified.....	78
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3. Portion of an ultimate pinna.....	77
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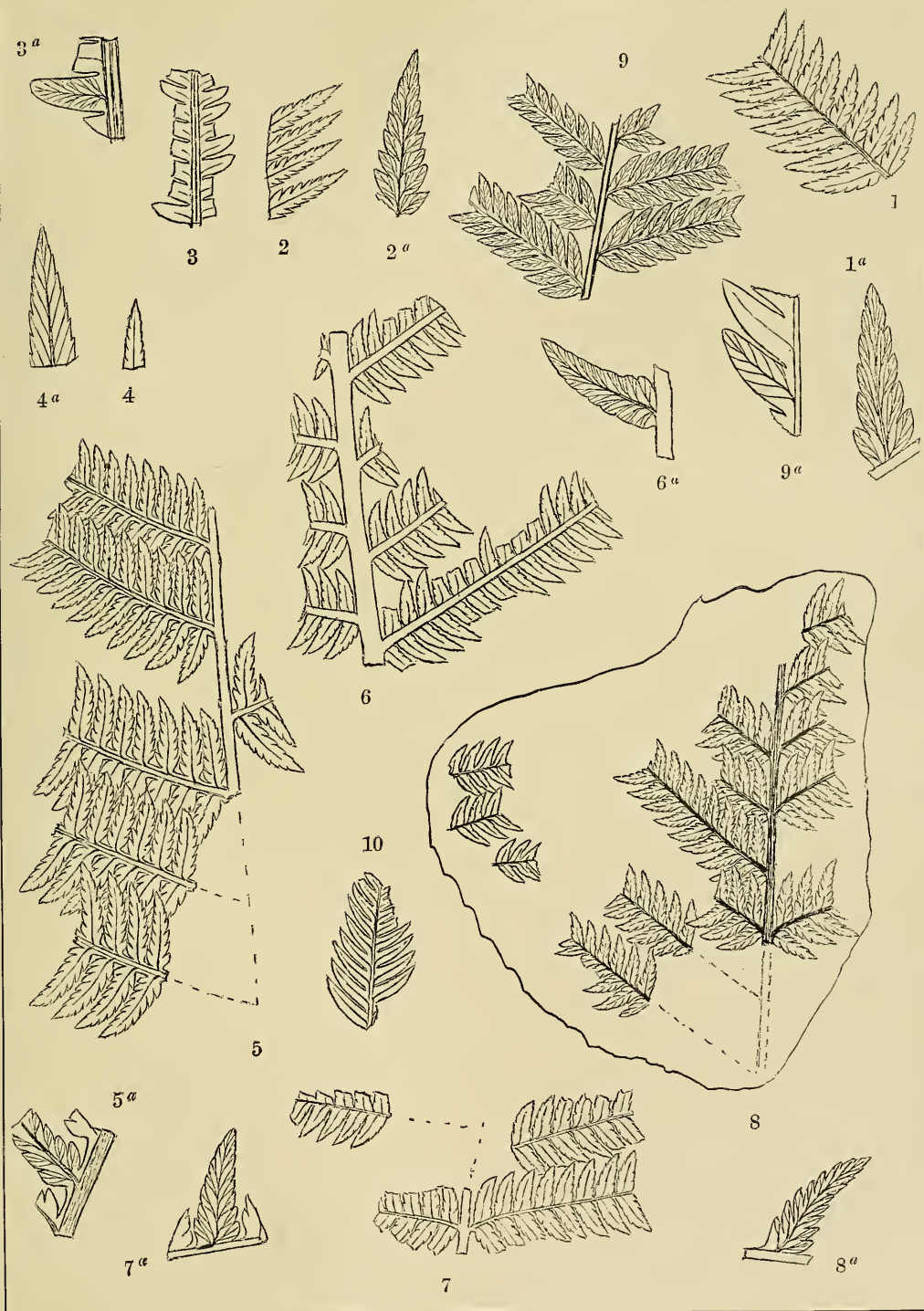


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3 ^a . Pinnule of 3 magnified.....	84
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11 ^a . Pinnule of 11 magnified.....	85
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6. Portion of a compound pinna	75
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7 ^a . Pinnule magnified.....	76
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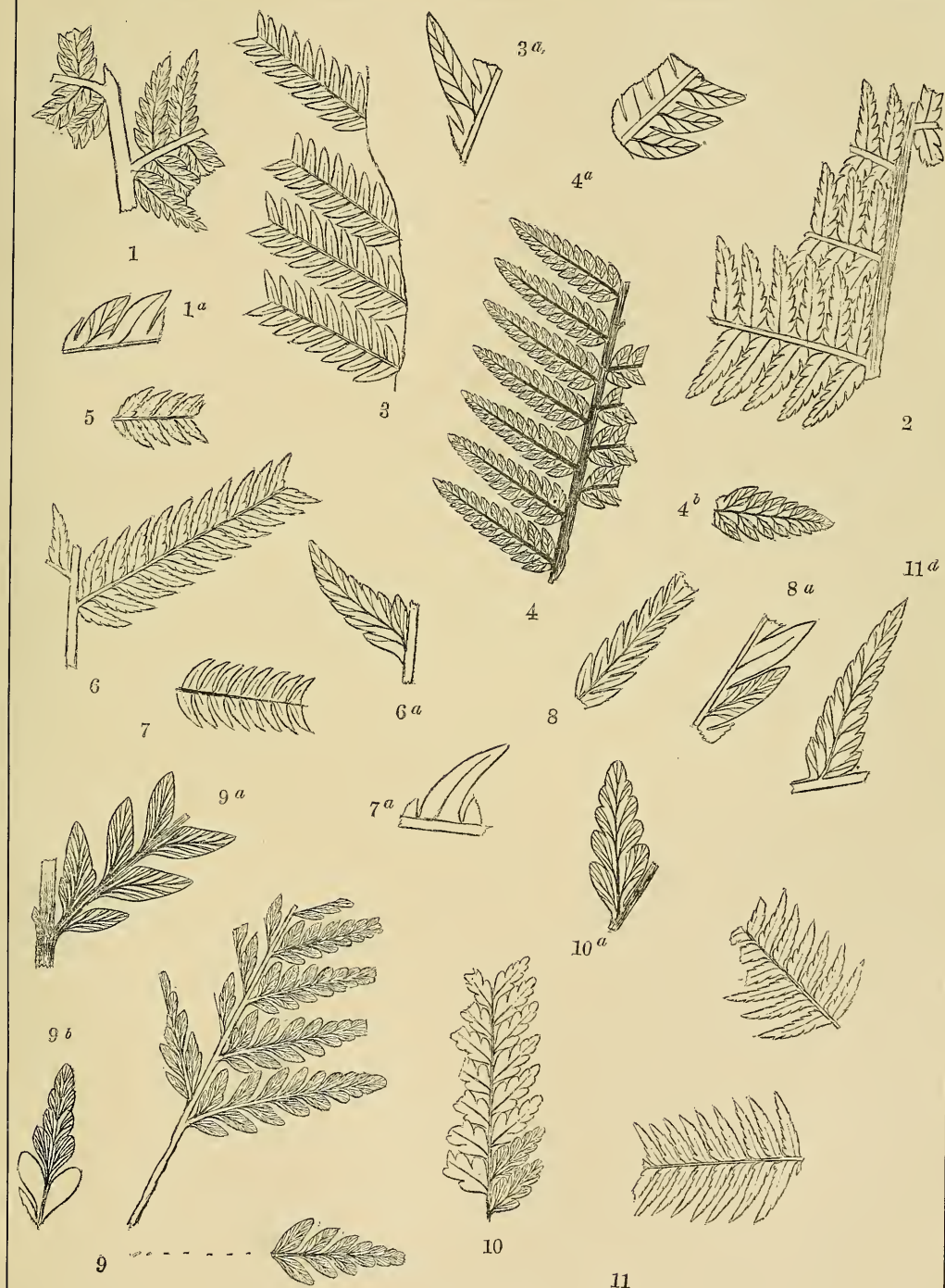


PLATE XXI.

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5. Two detached pinnules	100
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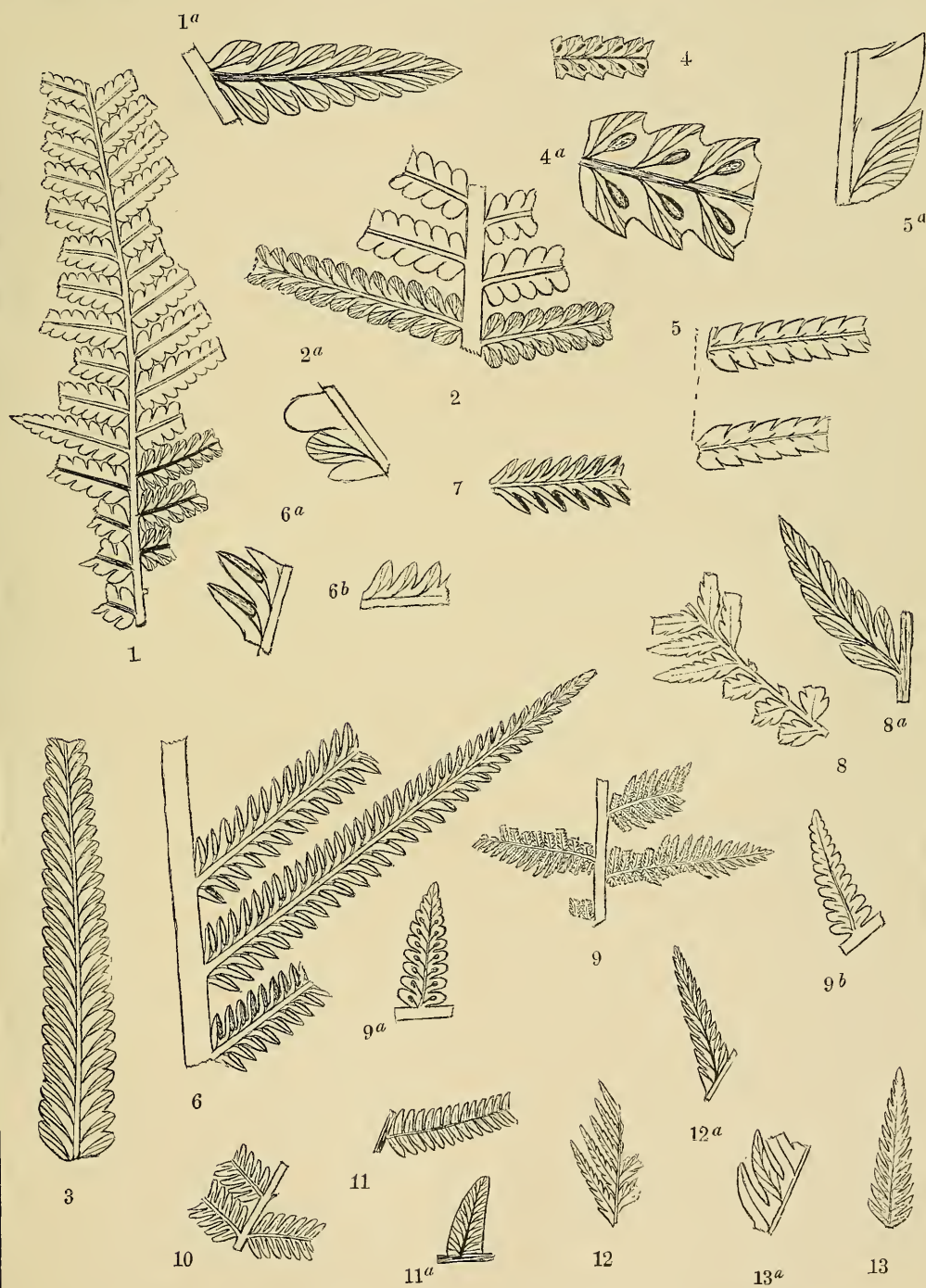


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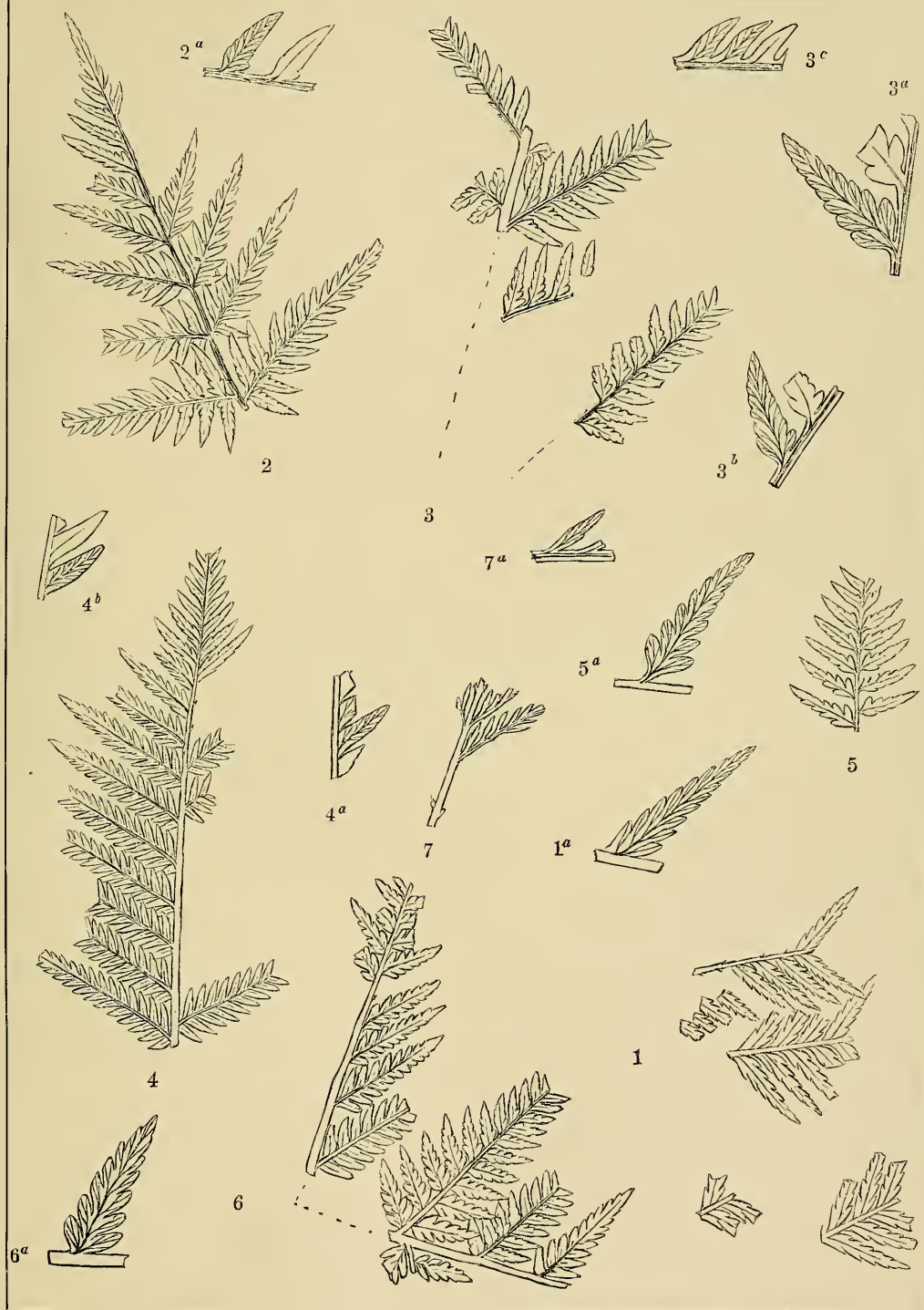


PLATE XXIV.

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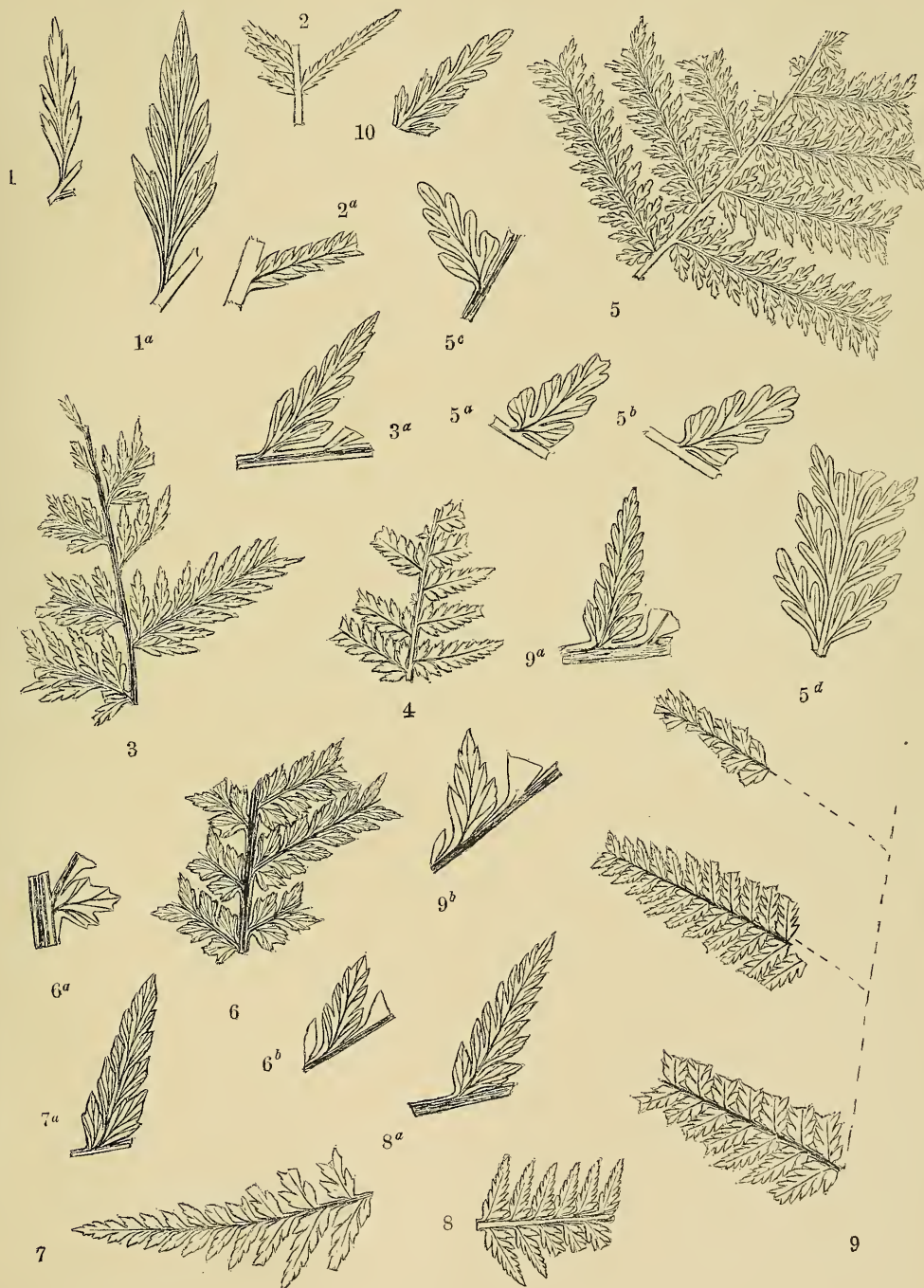


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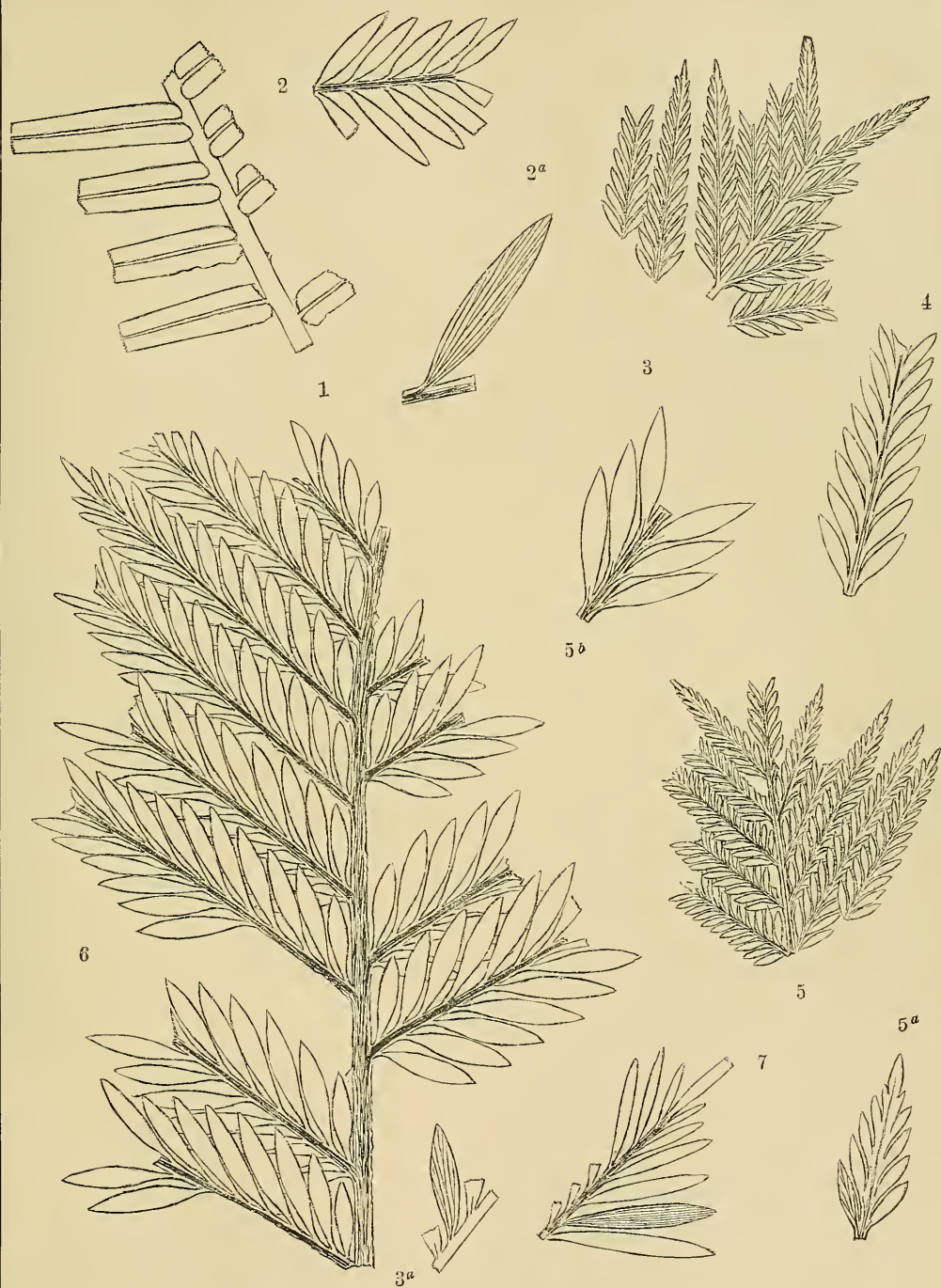


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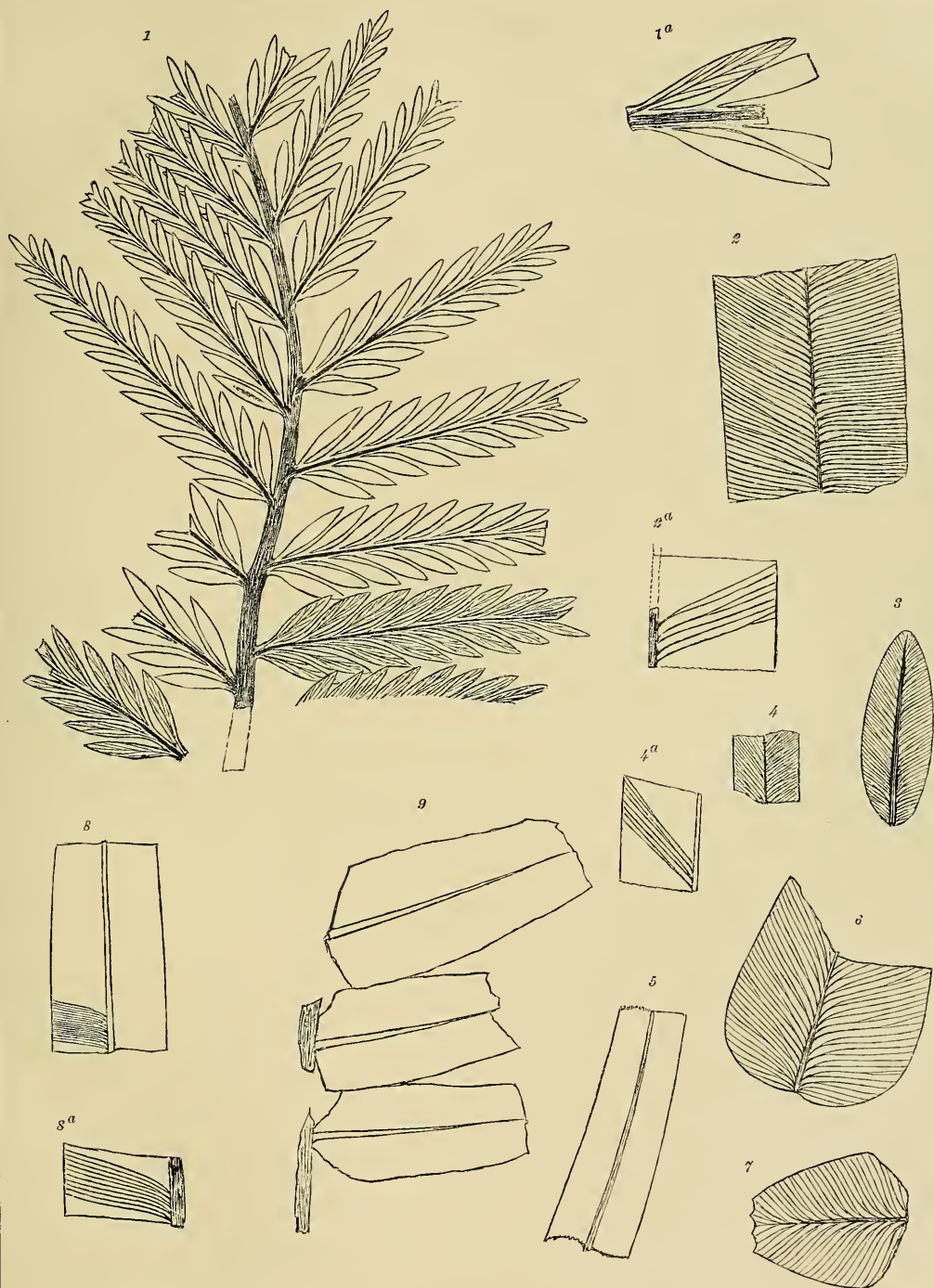


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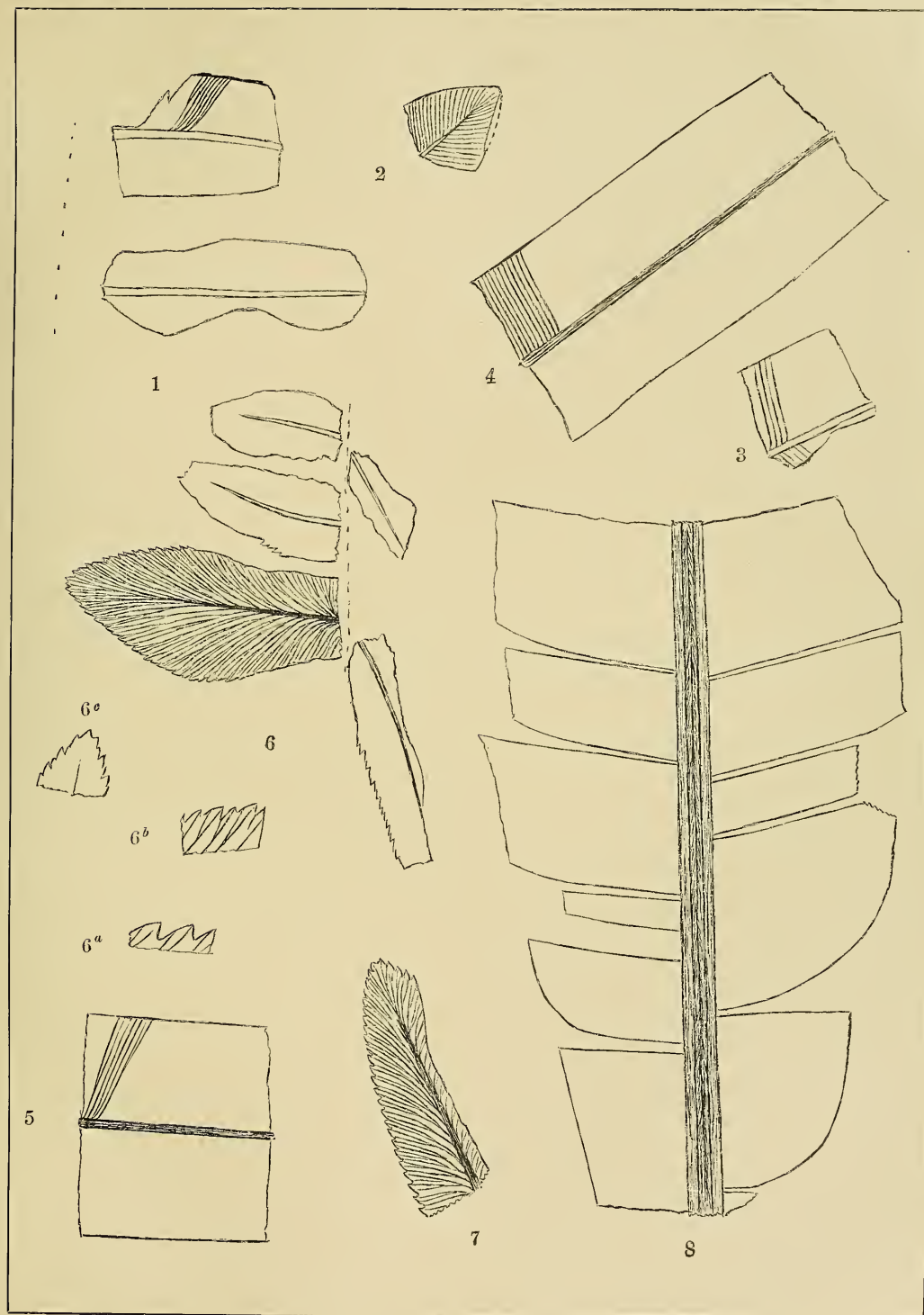


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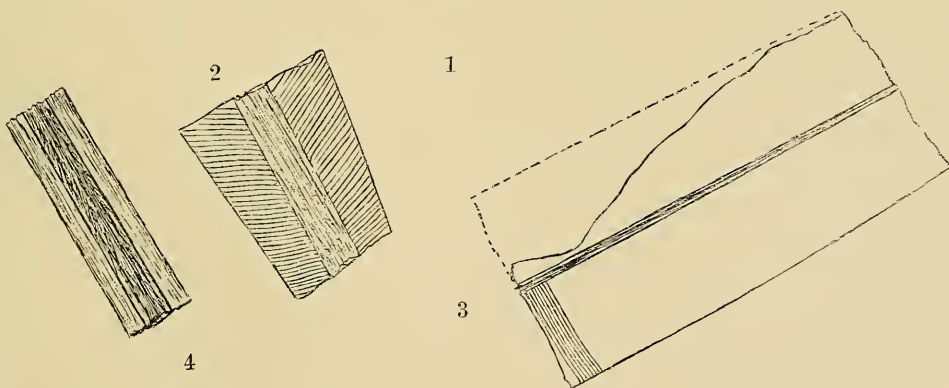
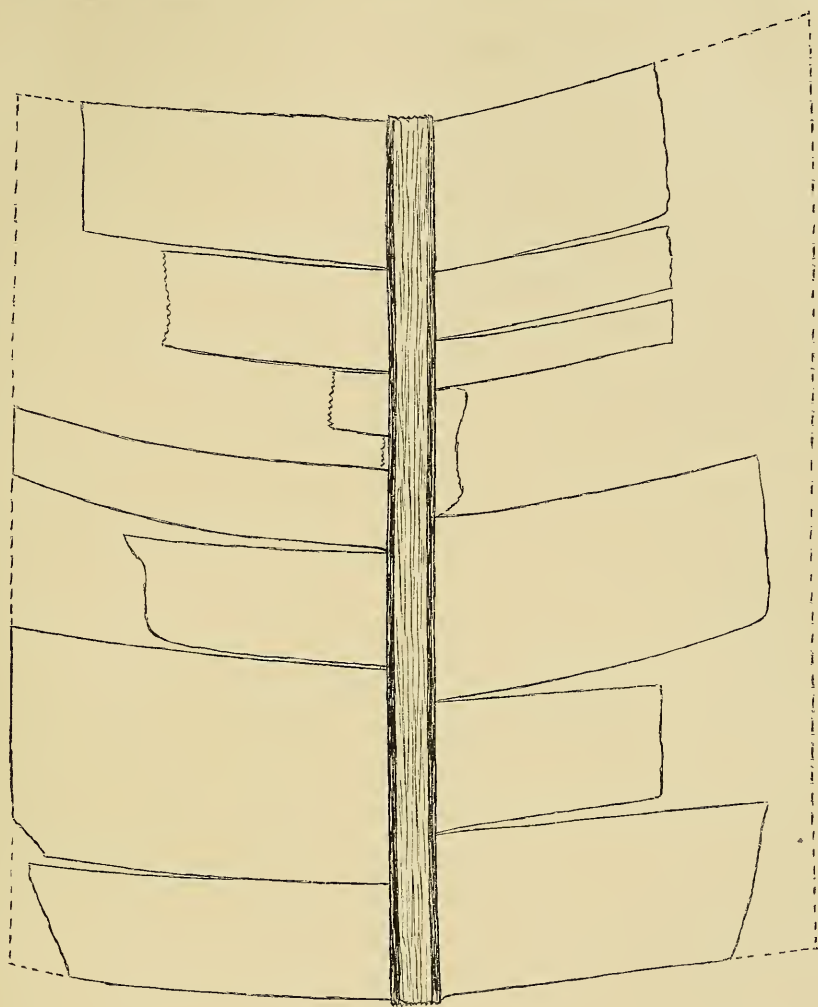


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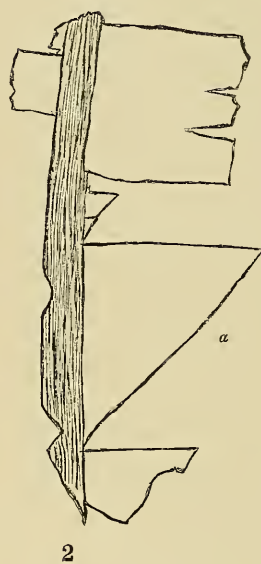
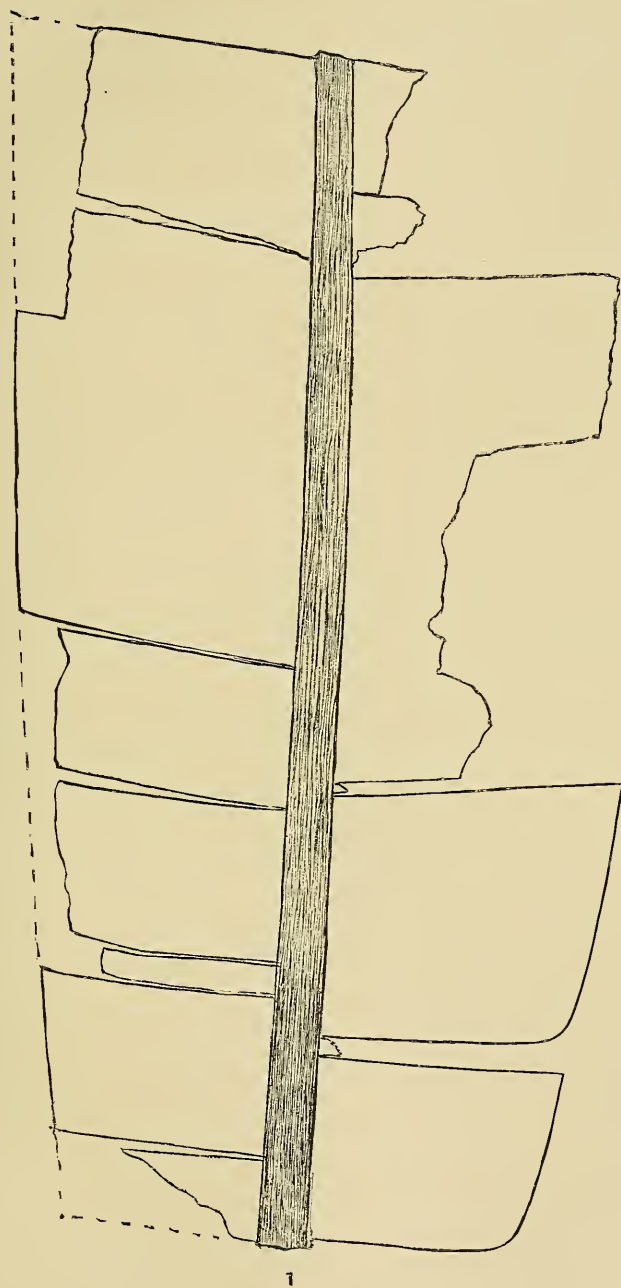


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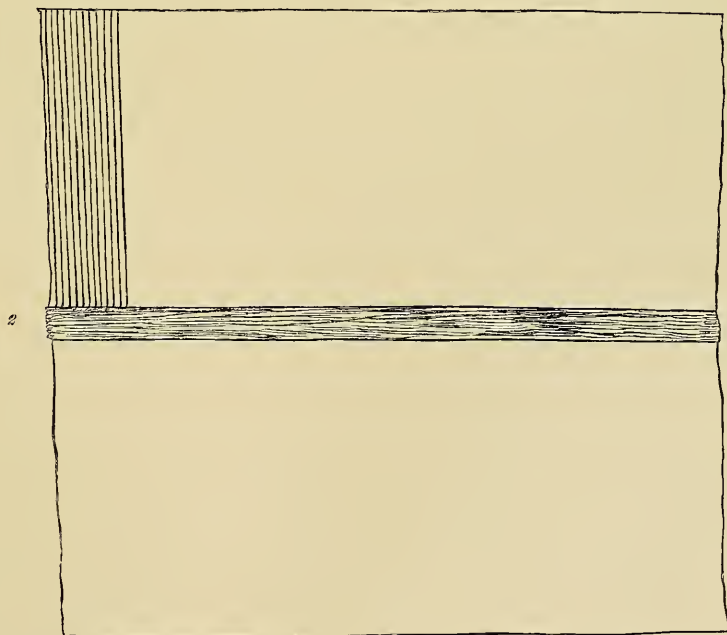
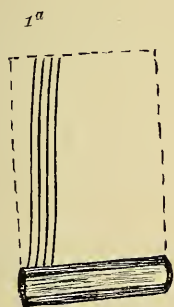
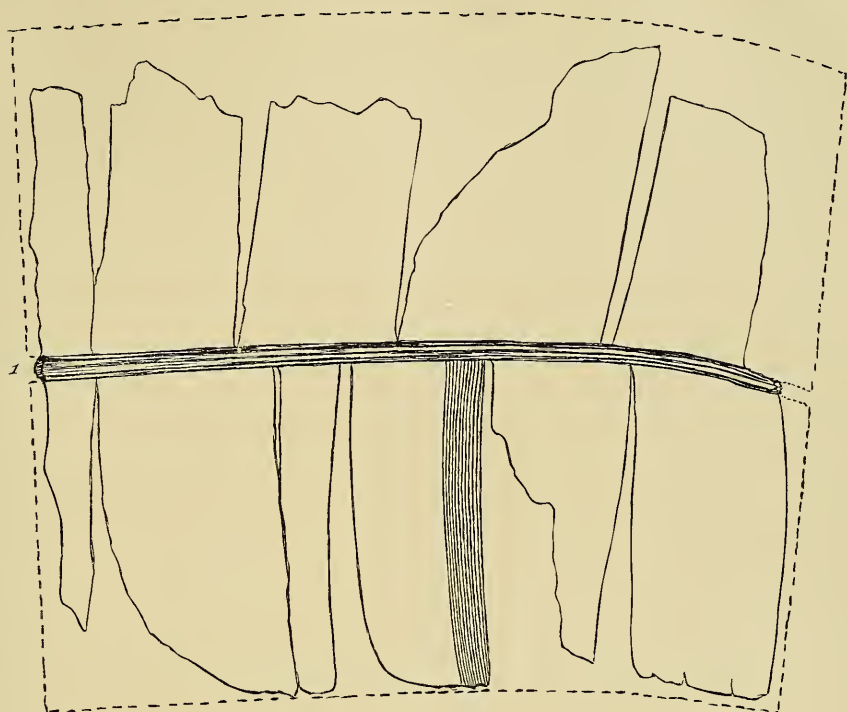
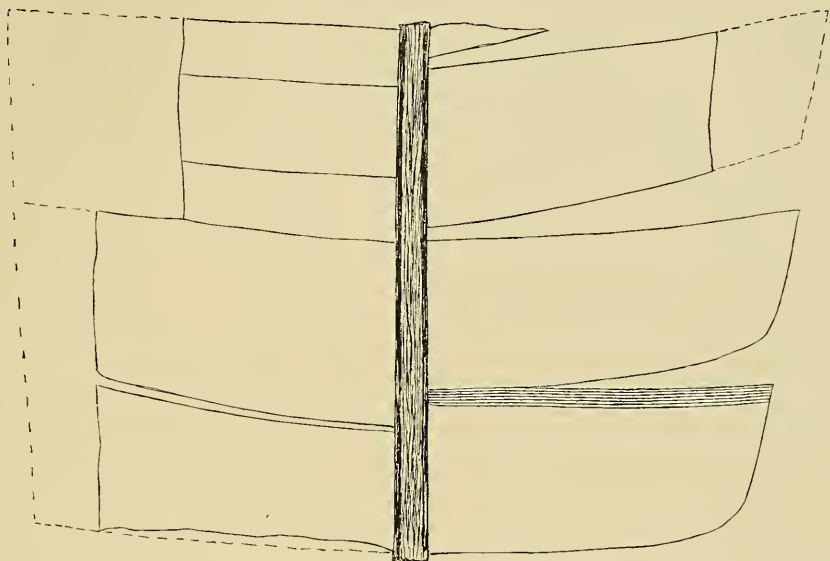


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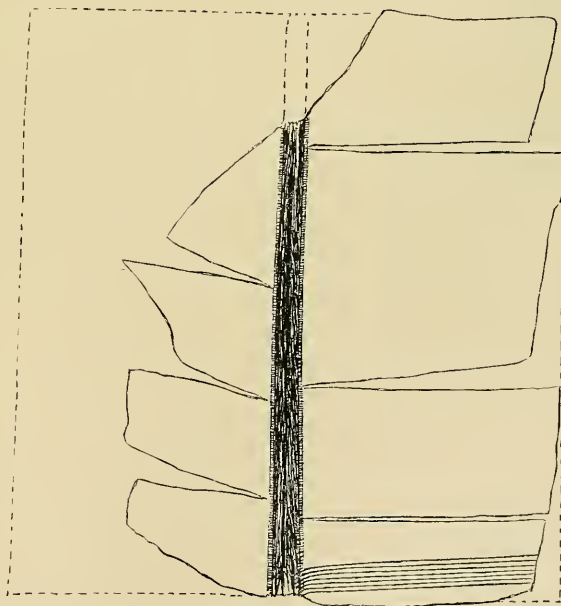
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3



2



4a



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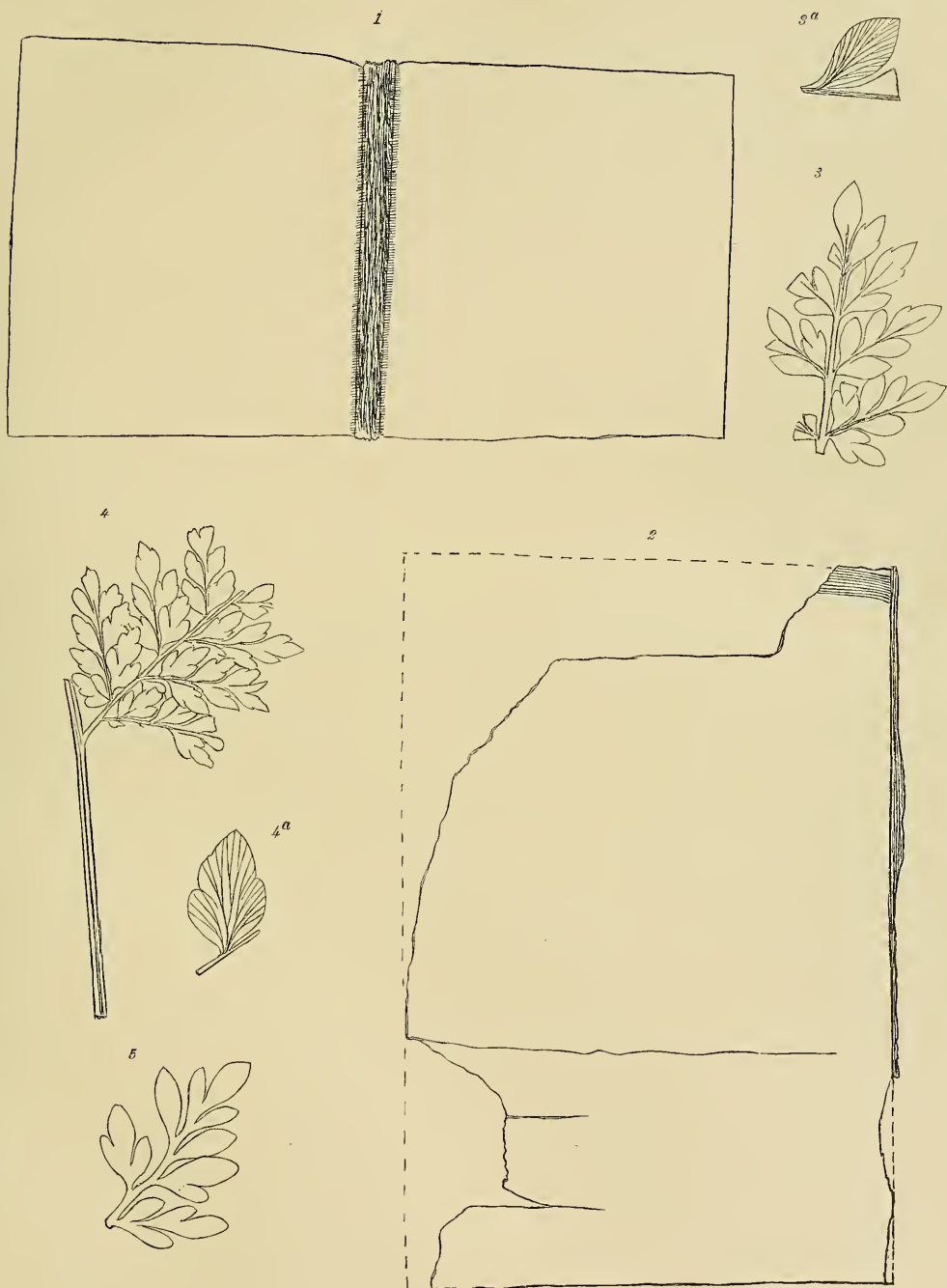




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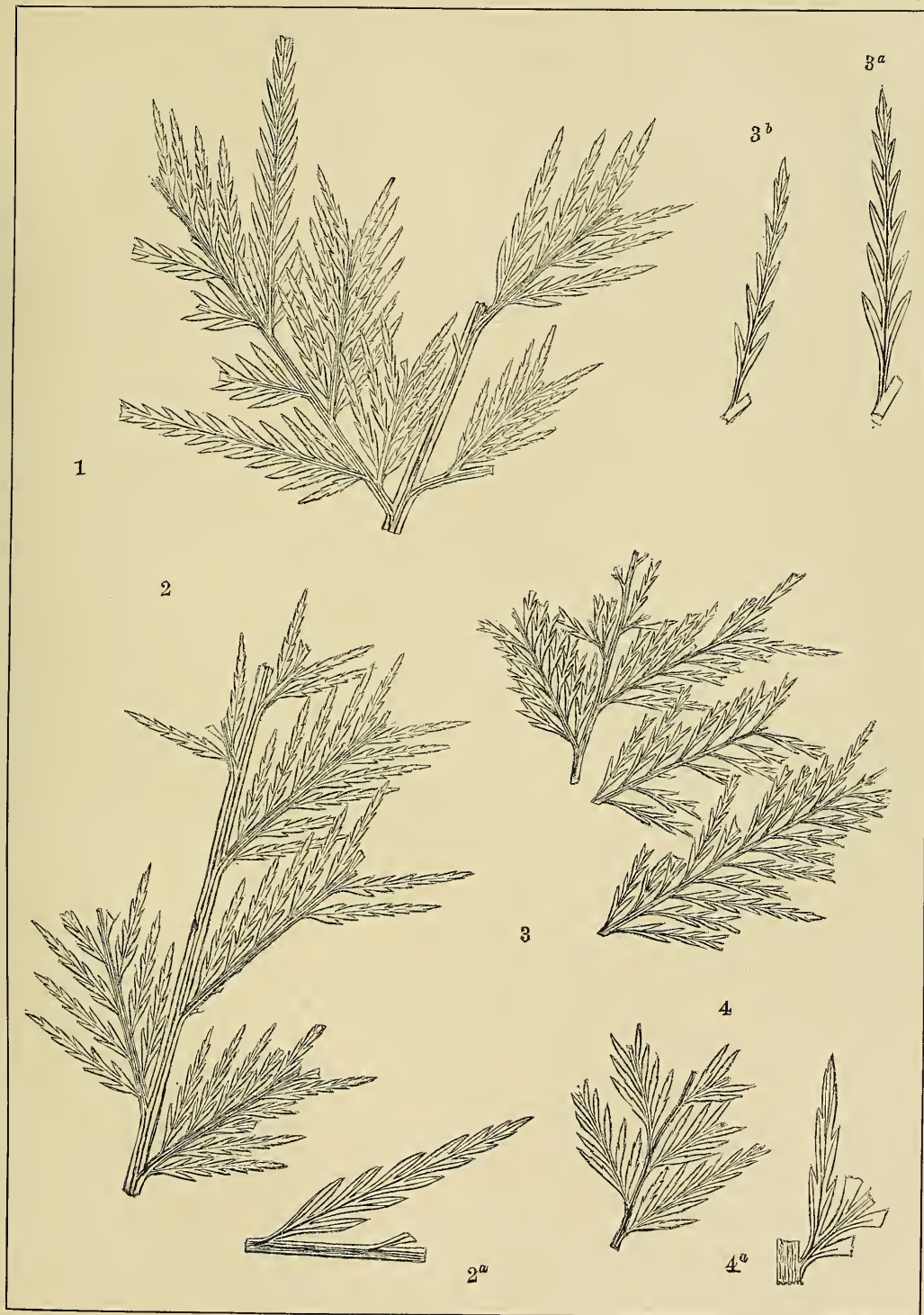


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PLATE XLVII.

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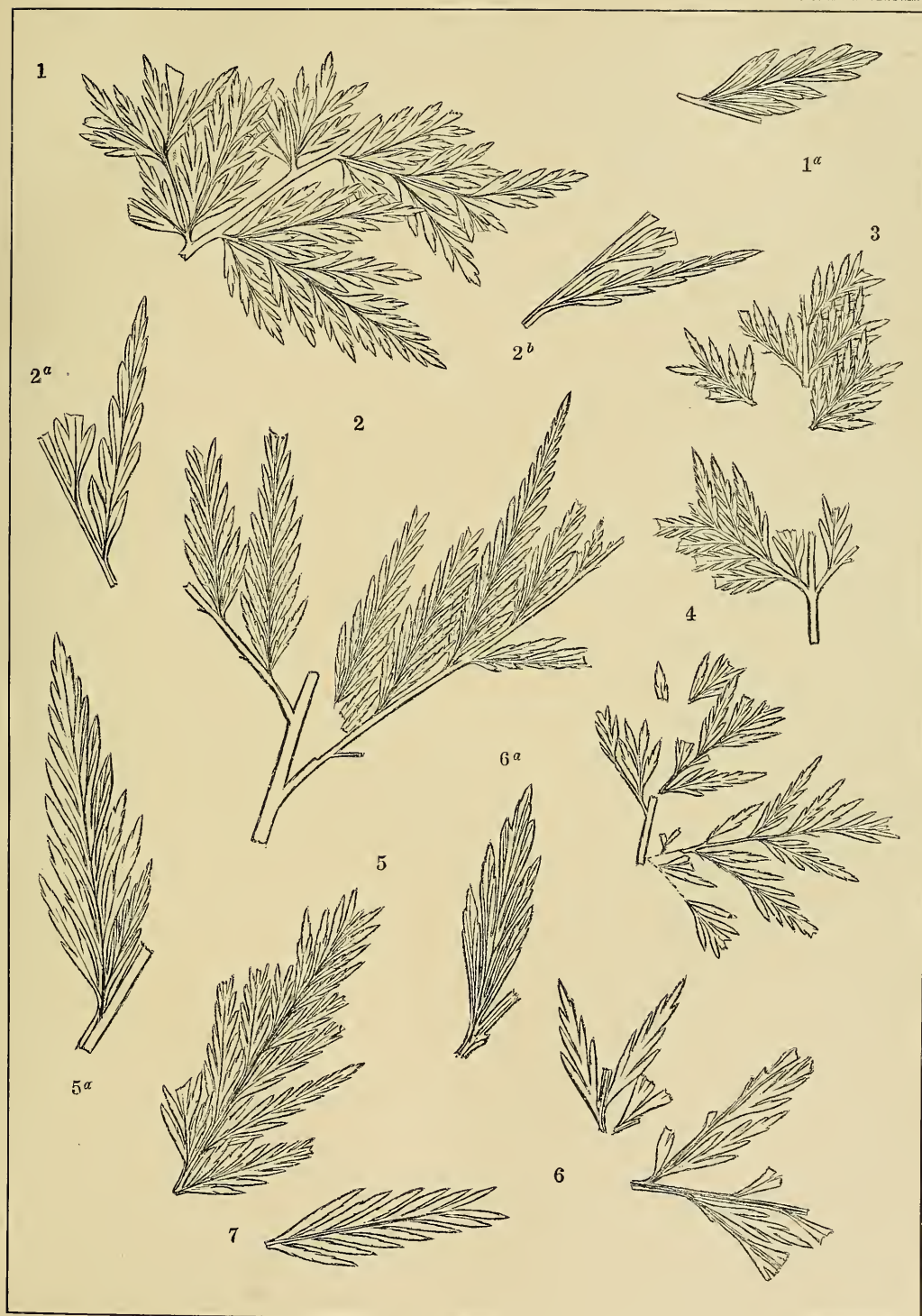


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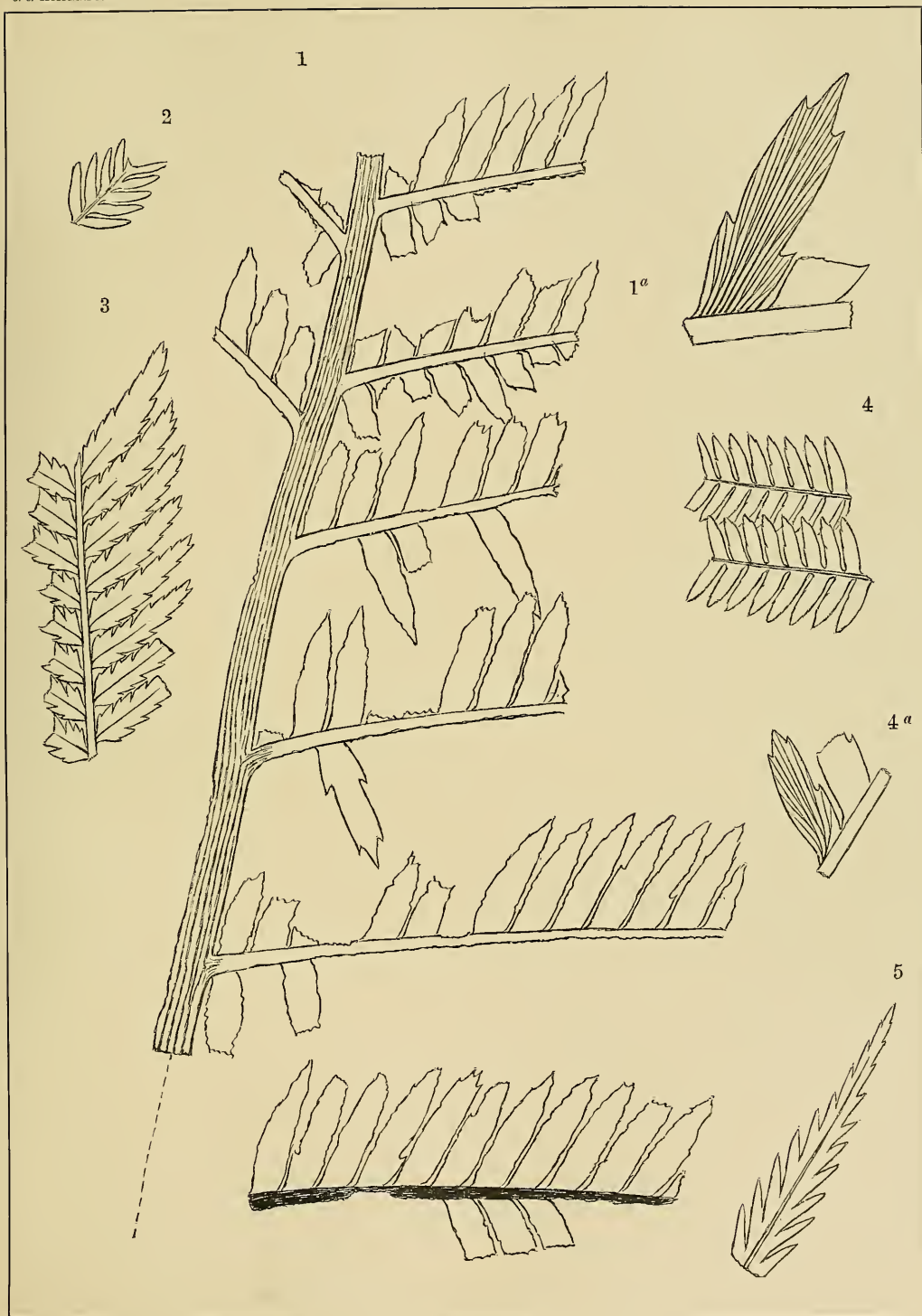


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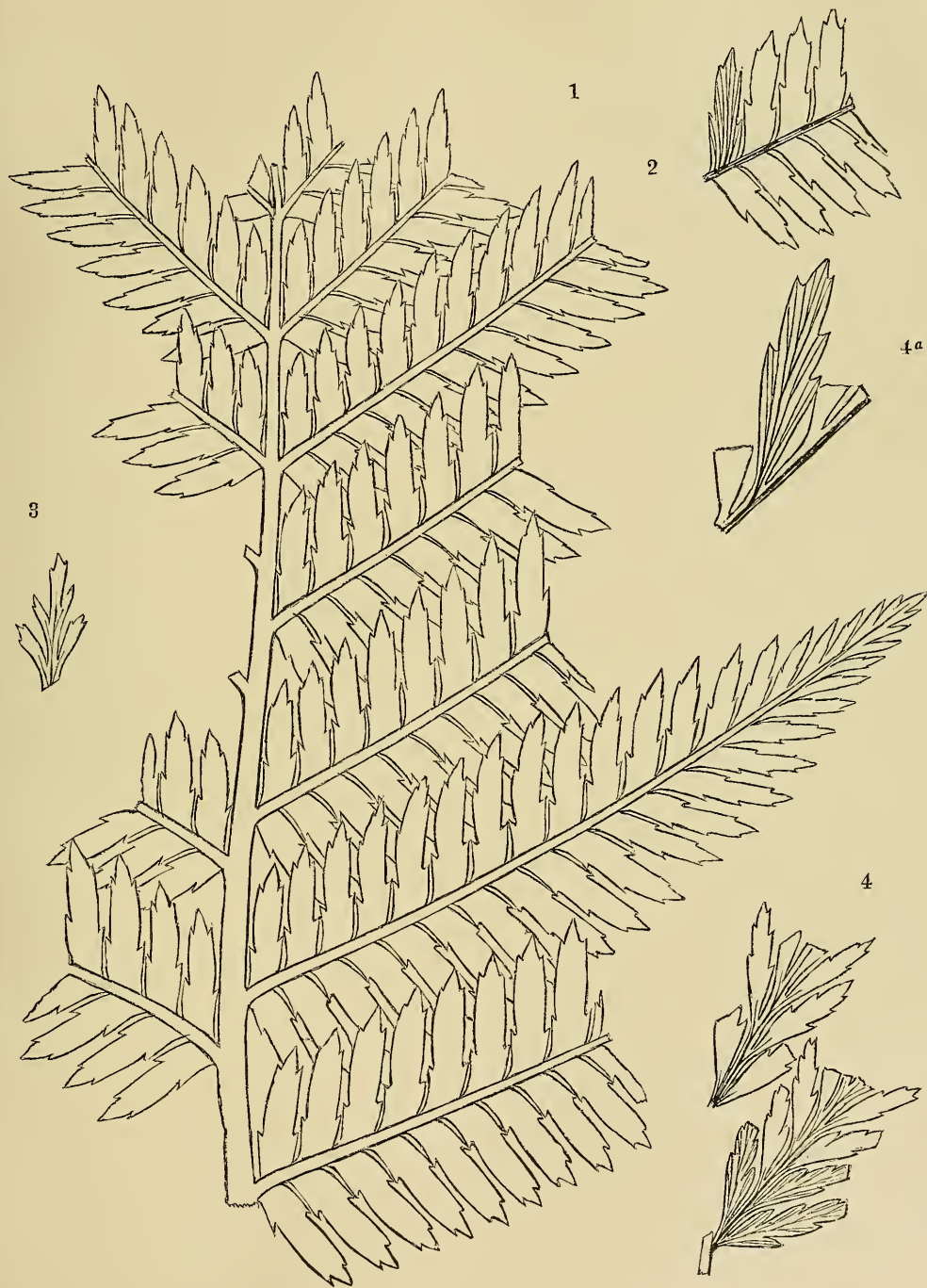


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2 ^a . Pinnules or lobes magnified	161

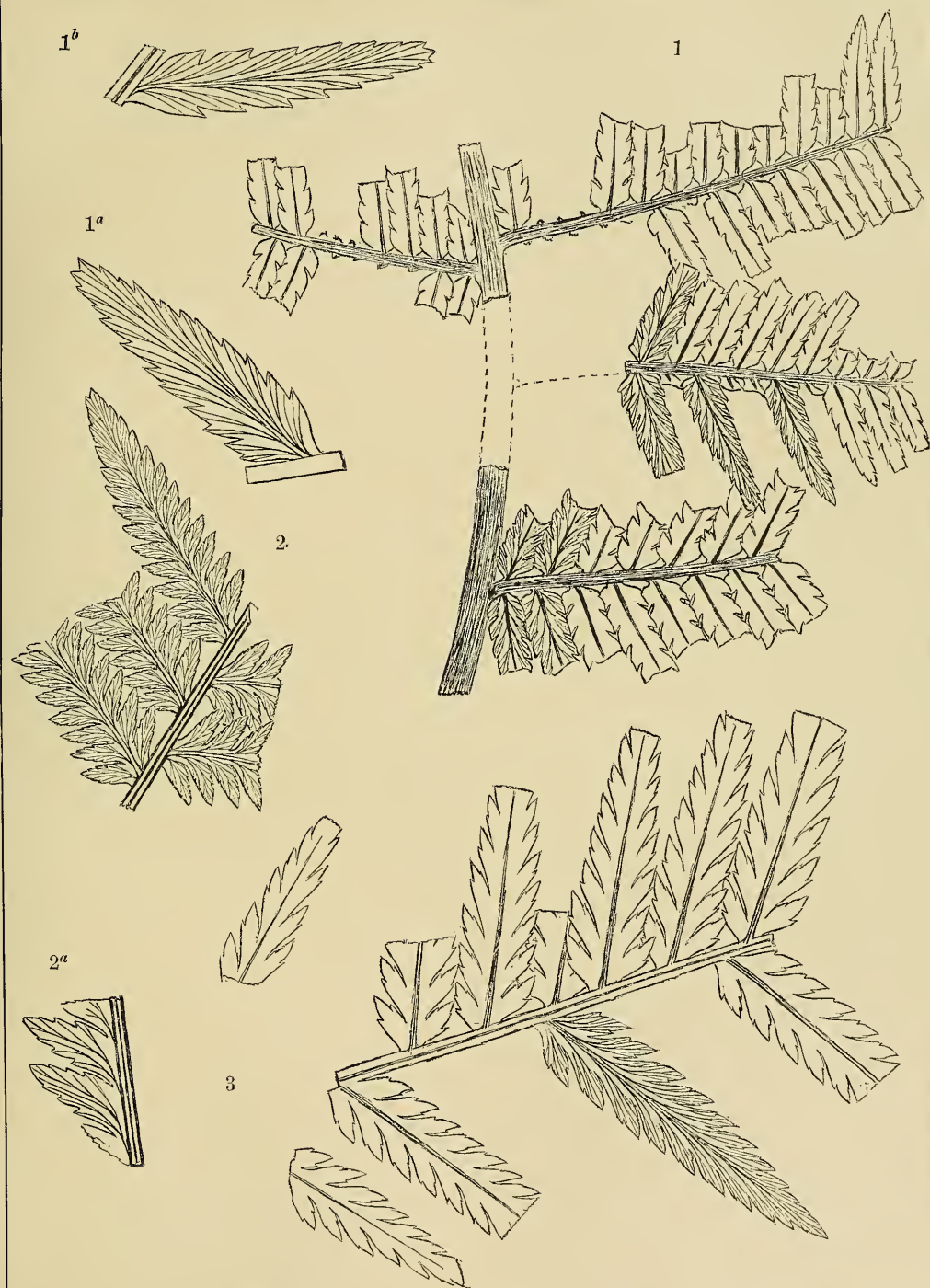


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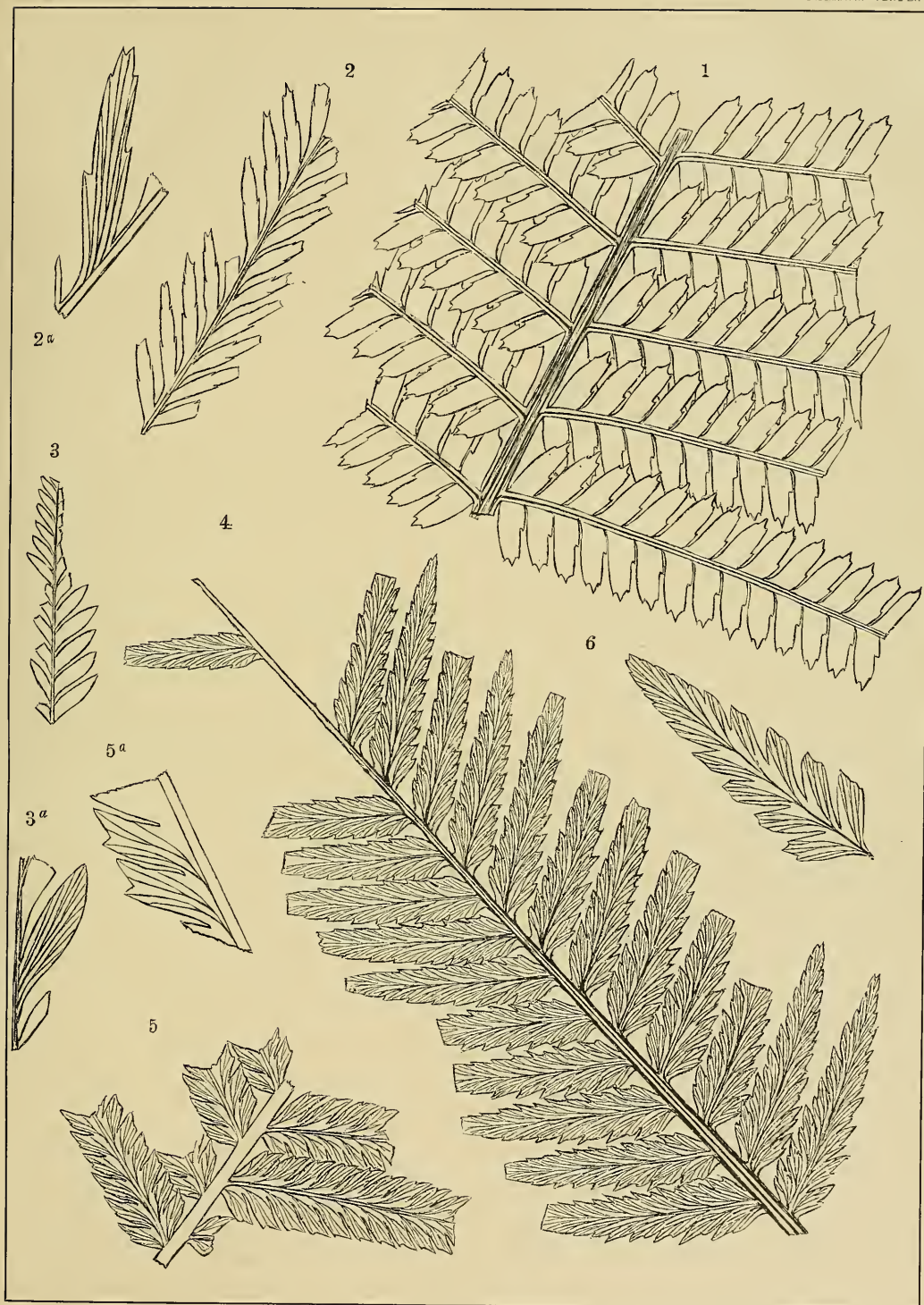


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3

3^a

4

5

7

5^a

6

8

1^b

2

1^a

1

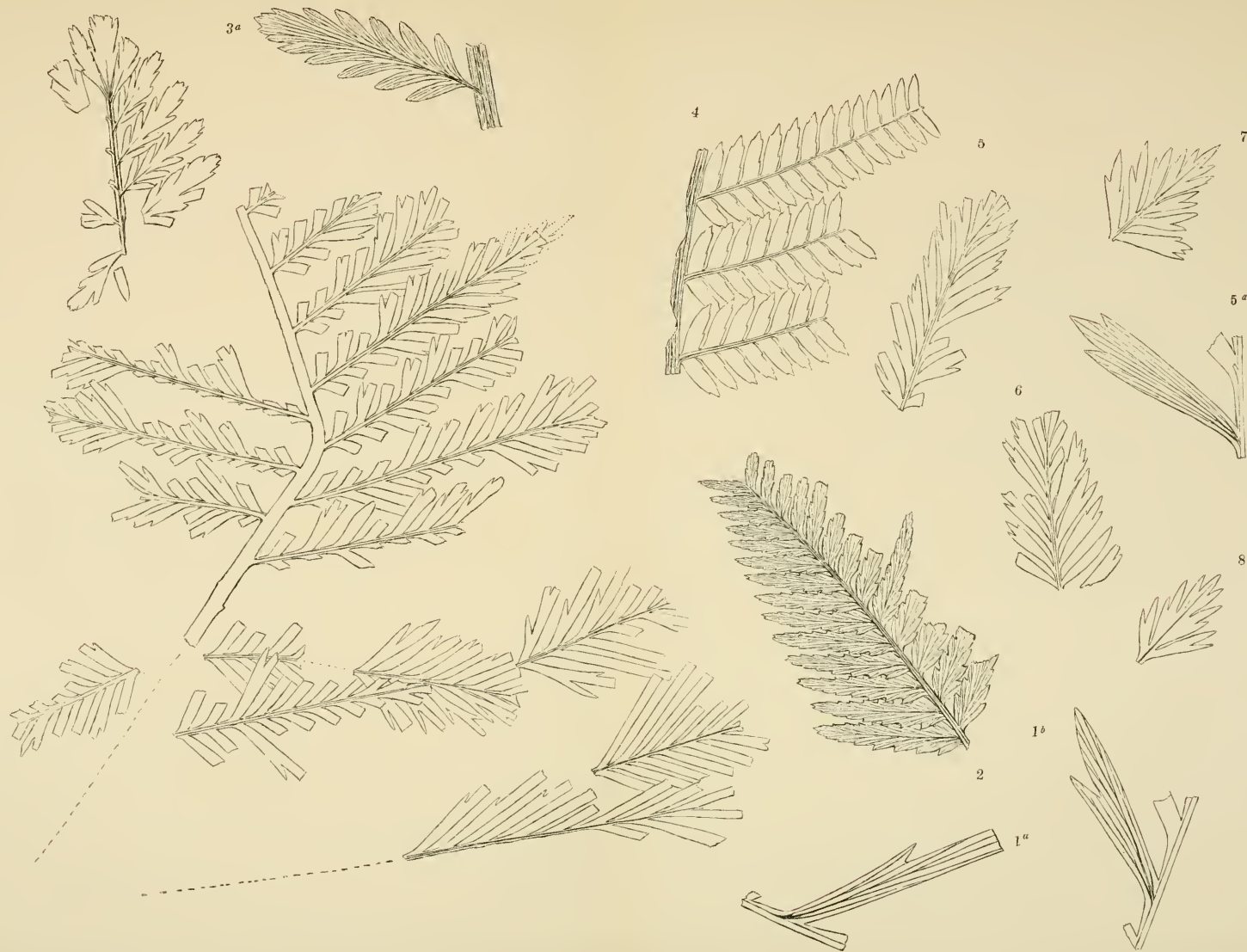




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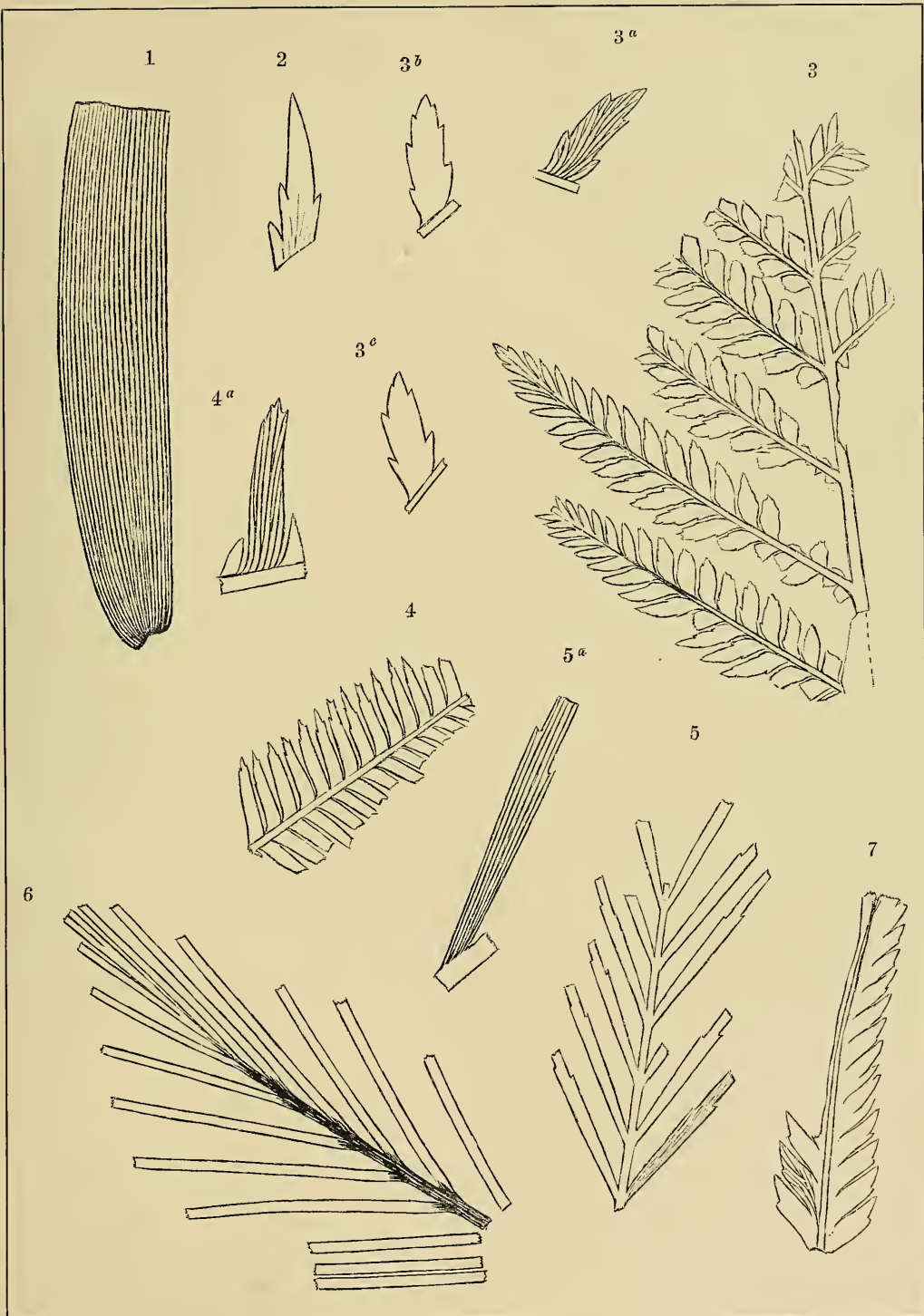


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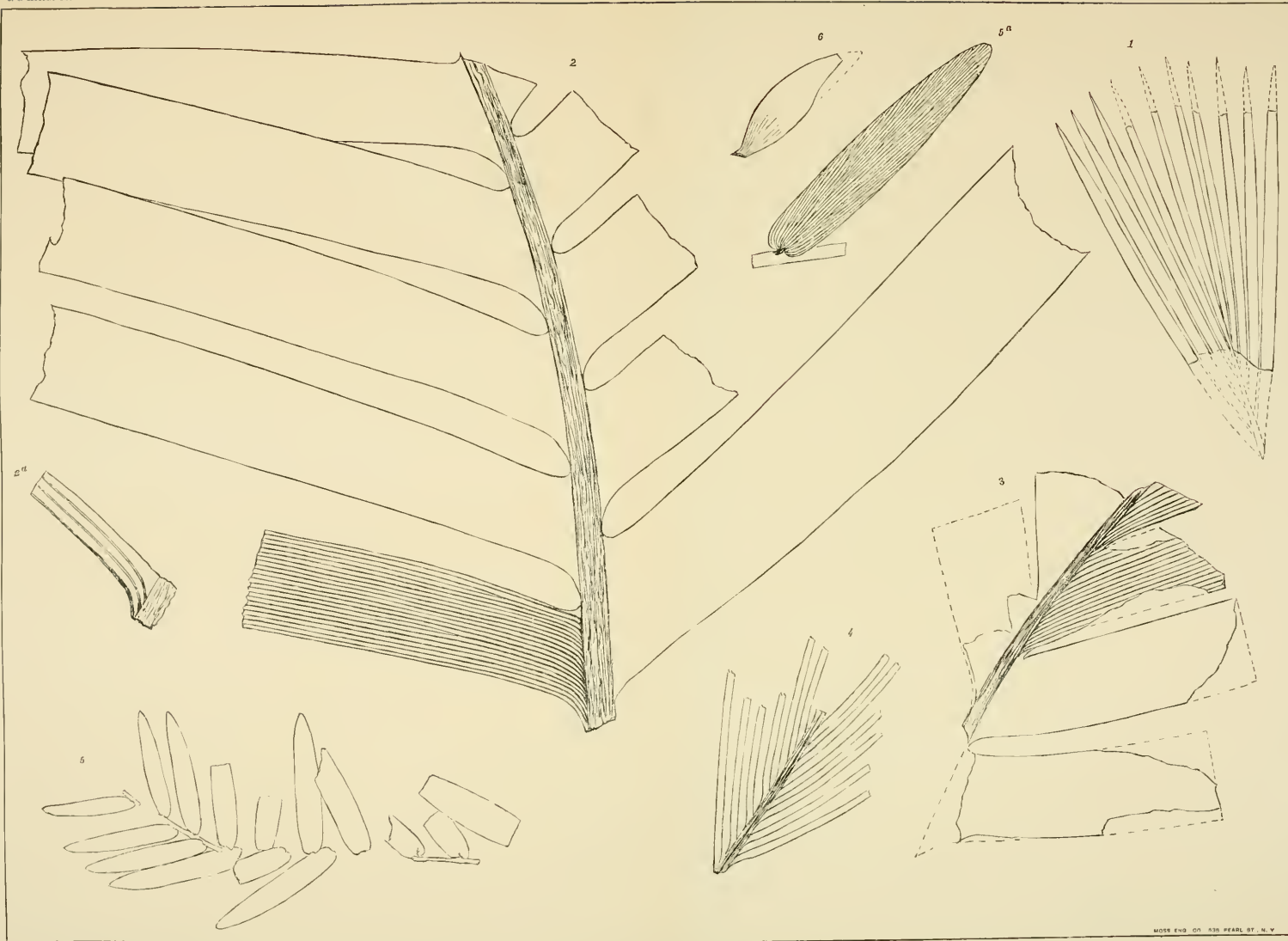


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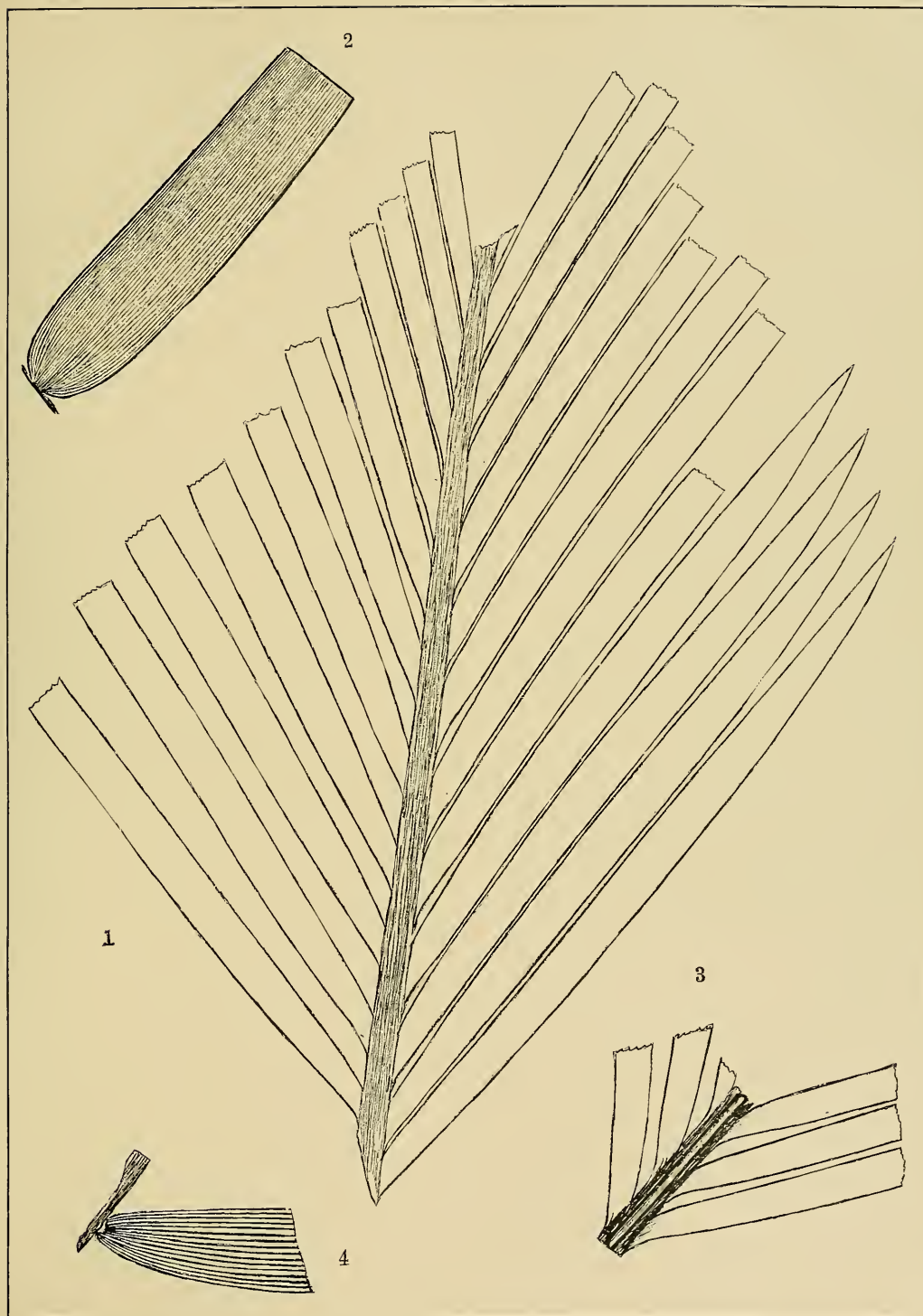


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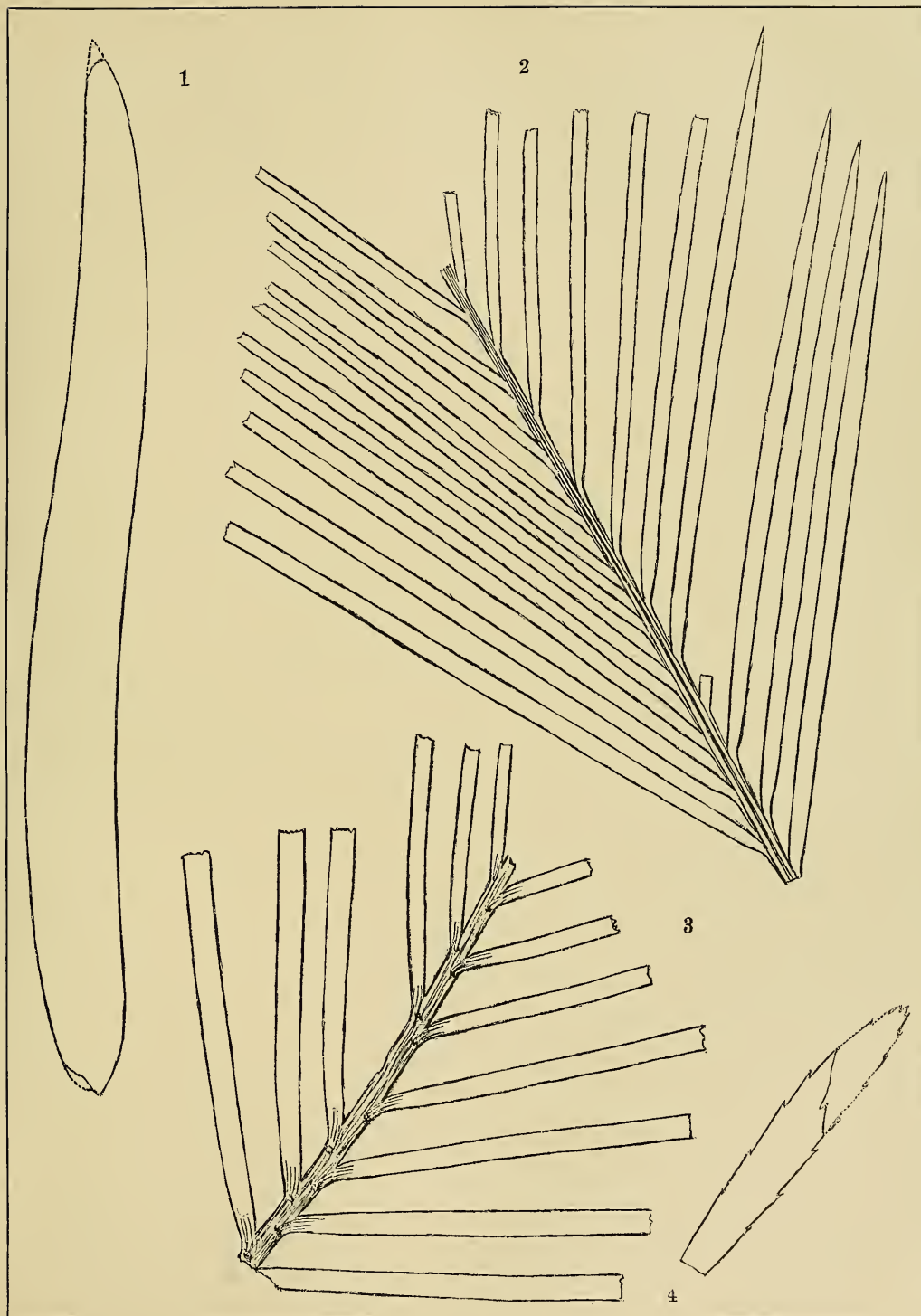


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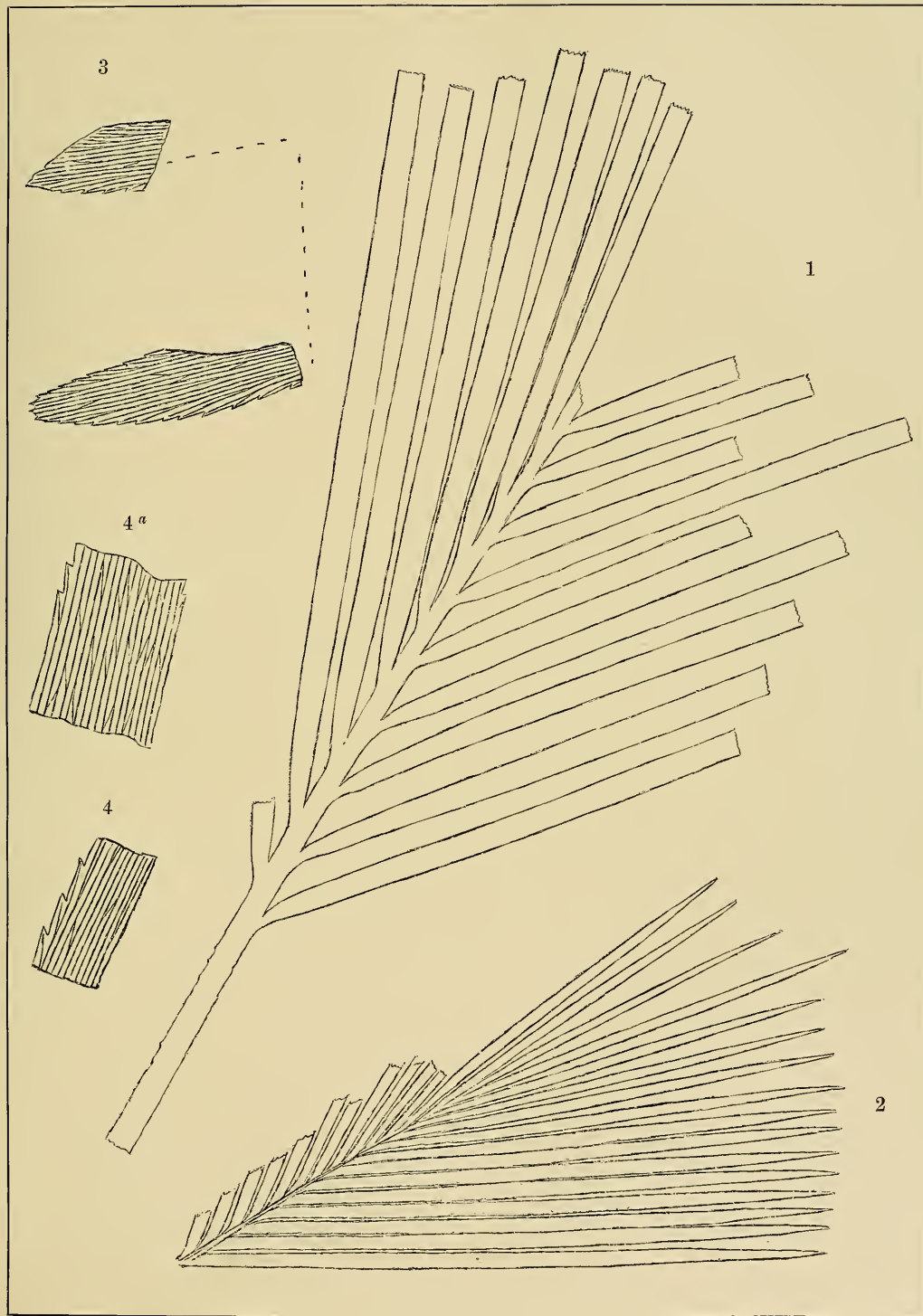


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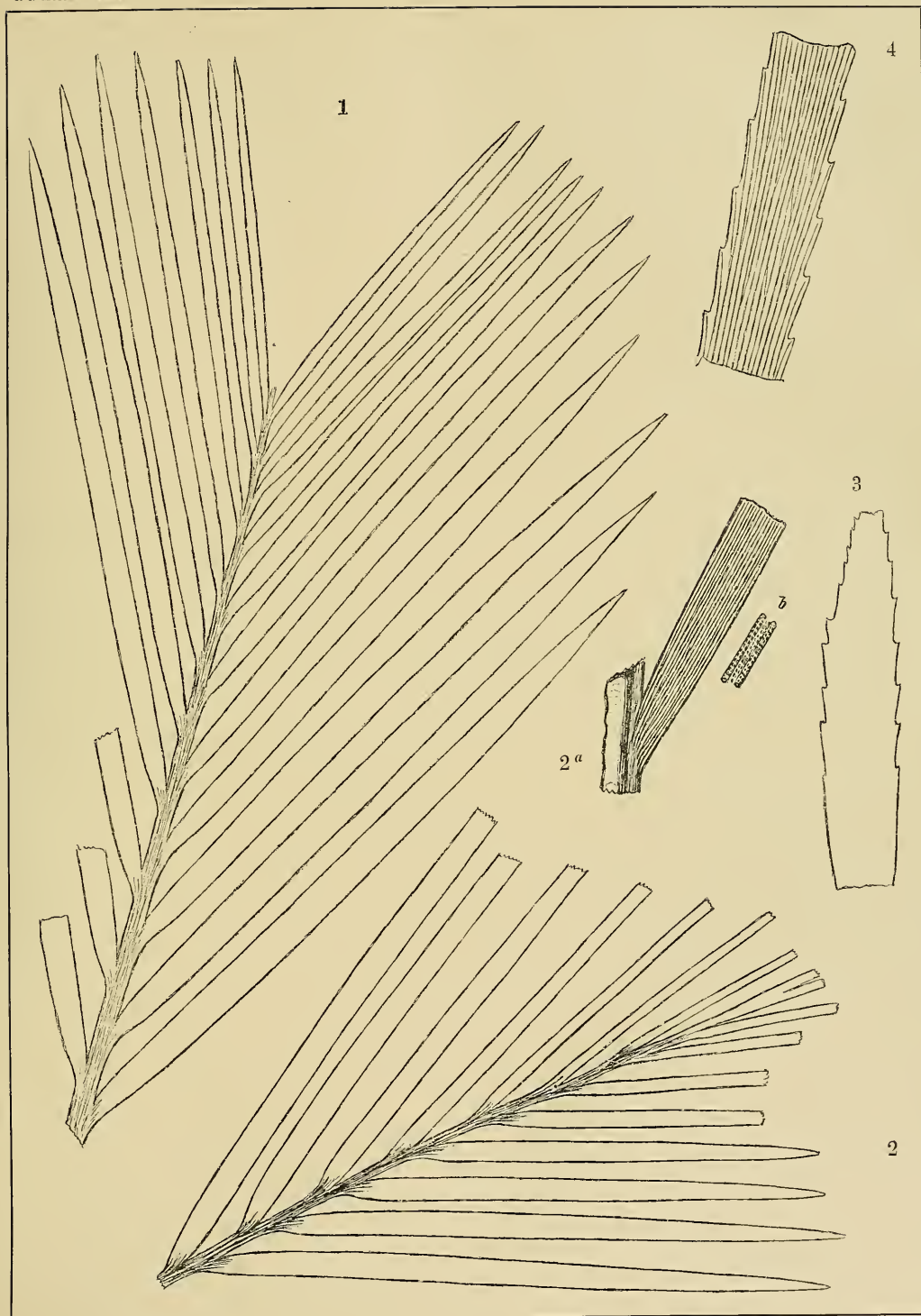
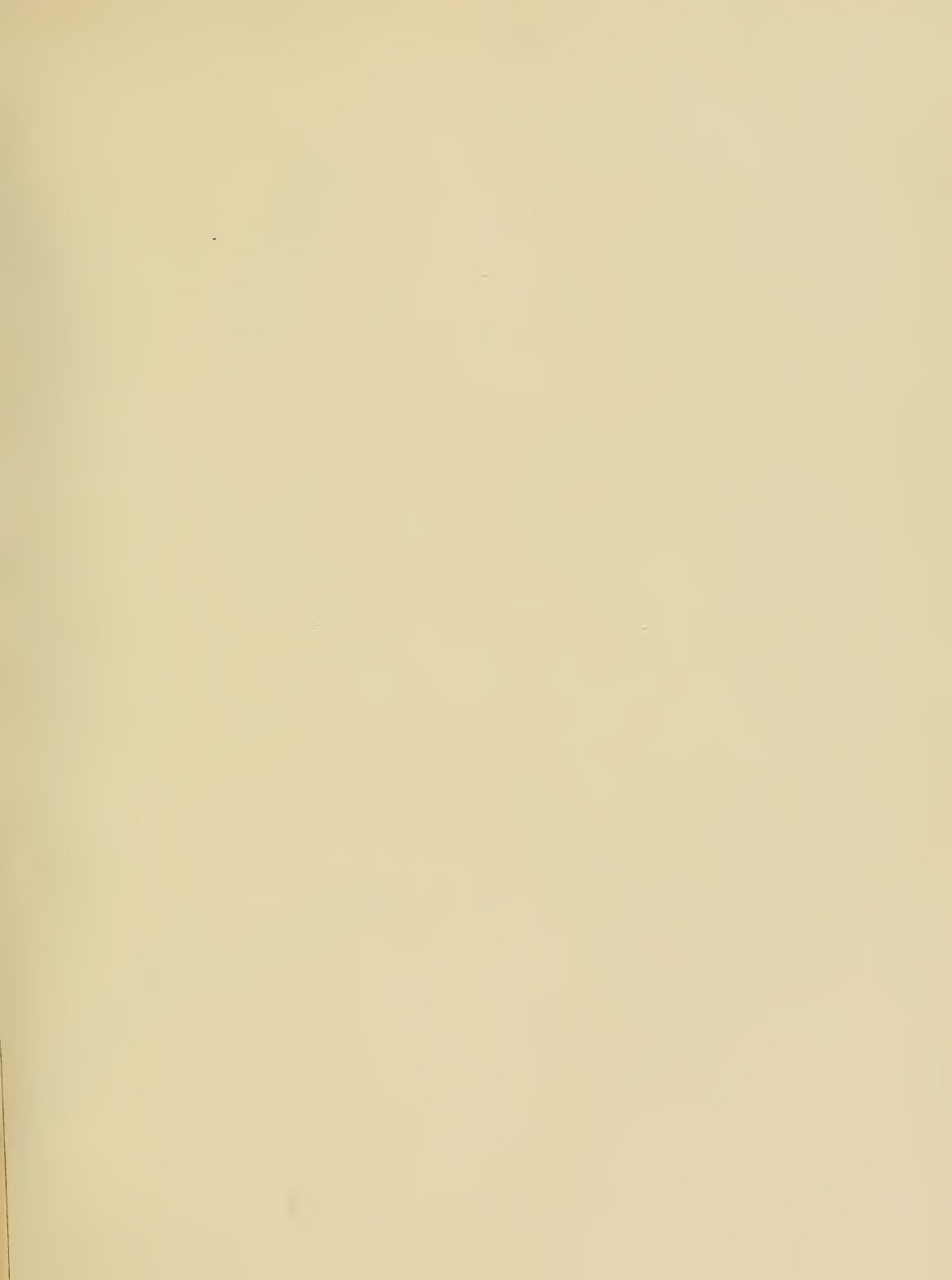


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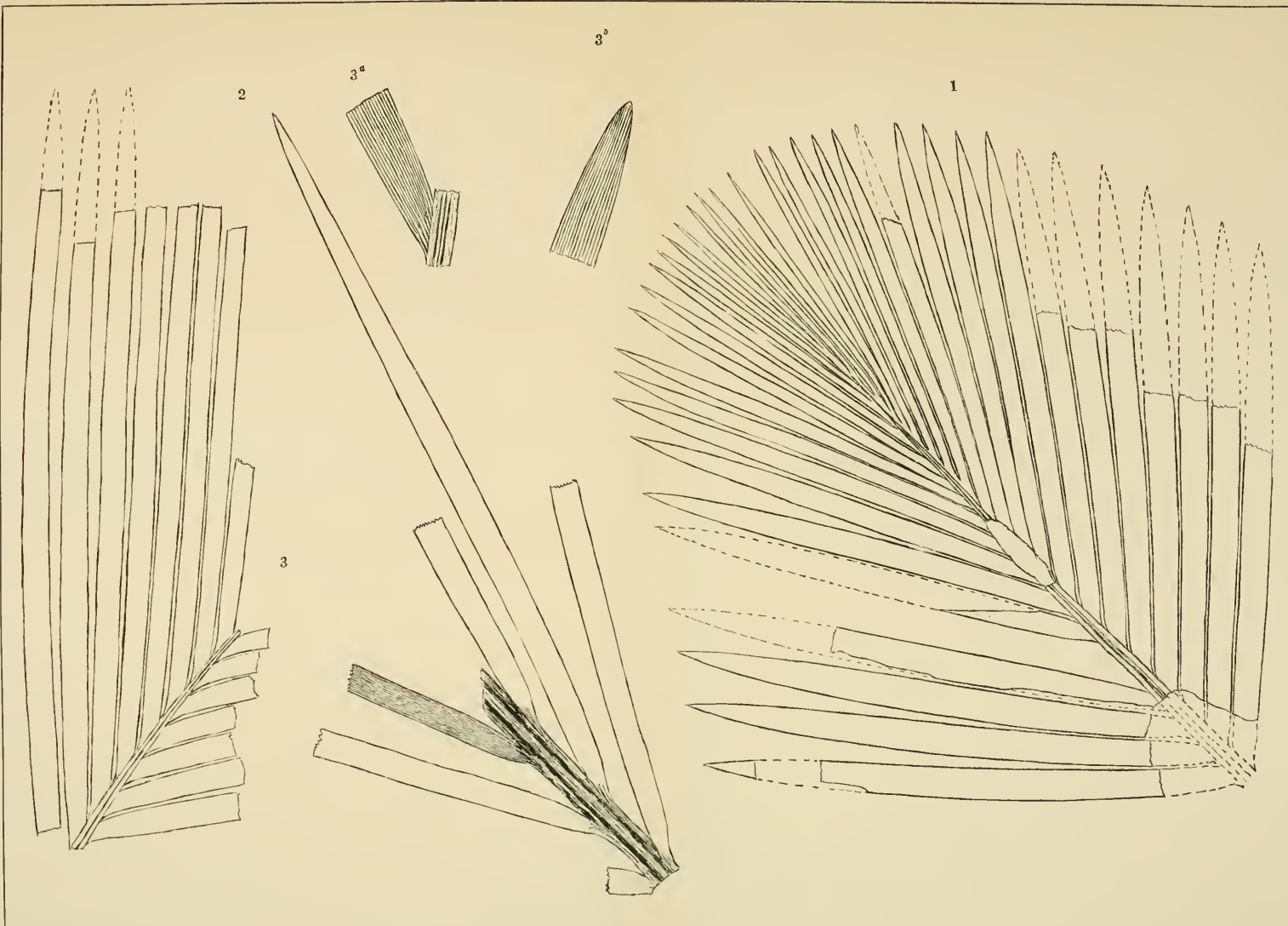


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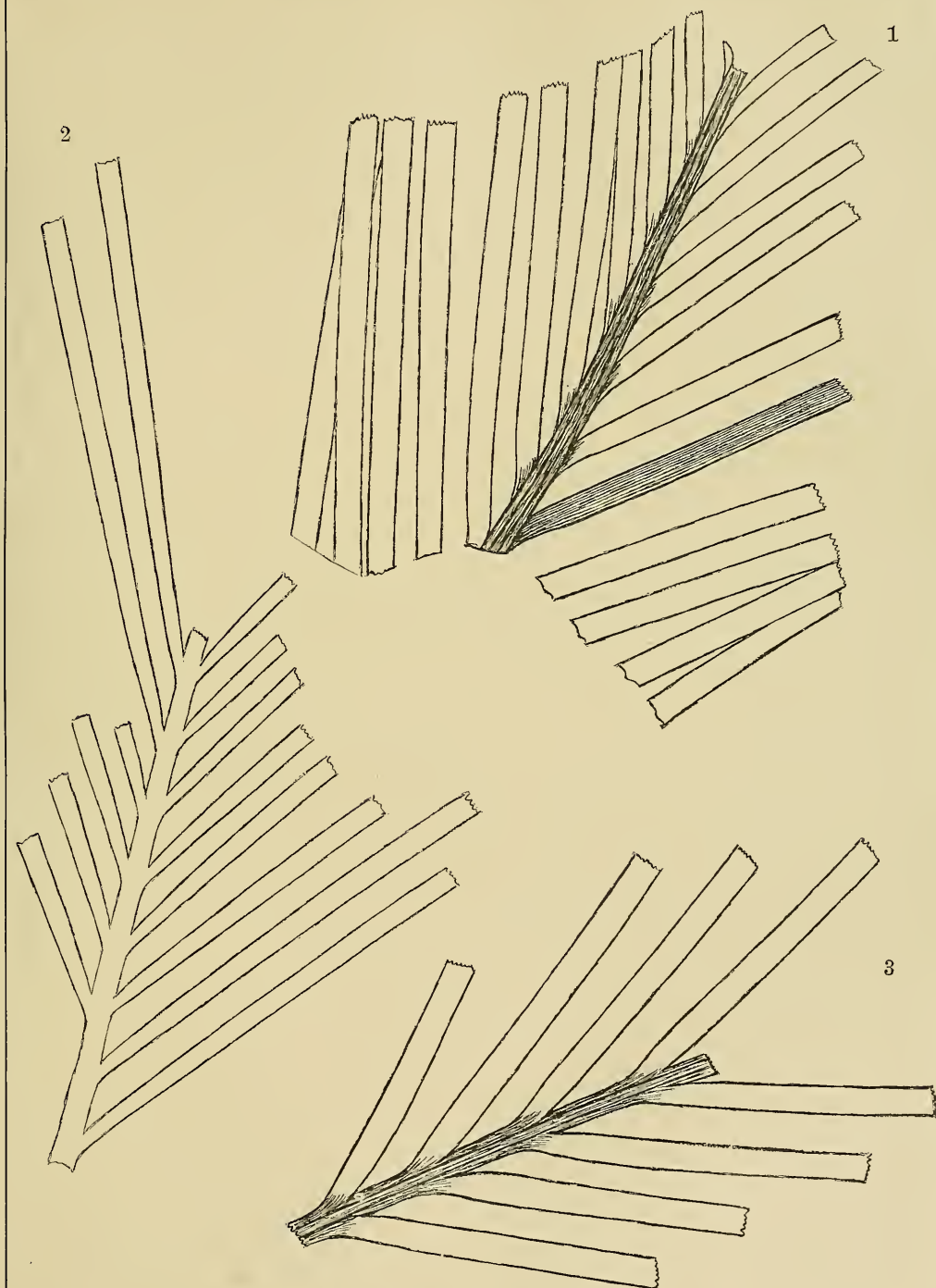


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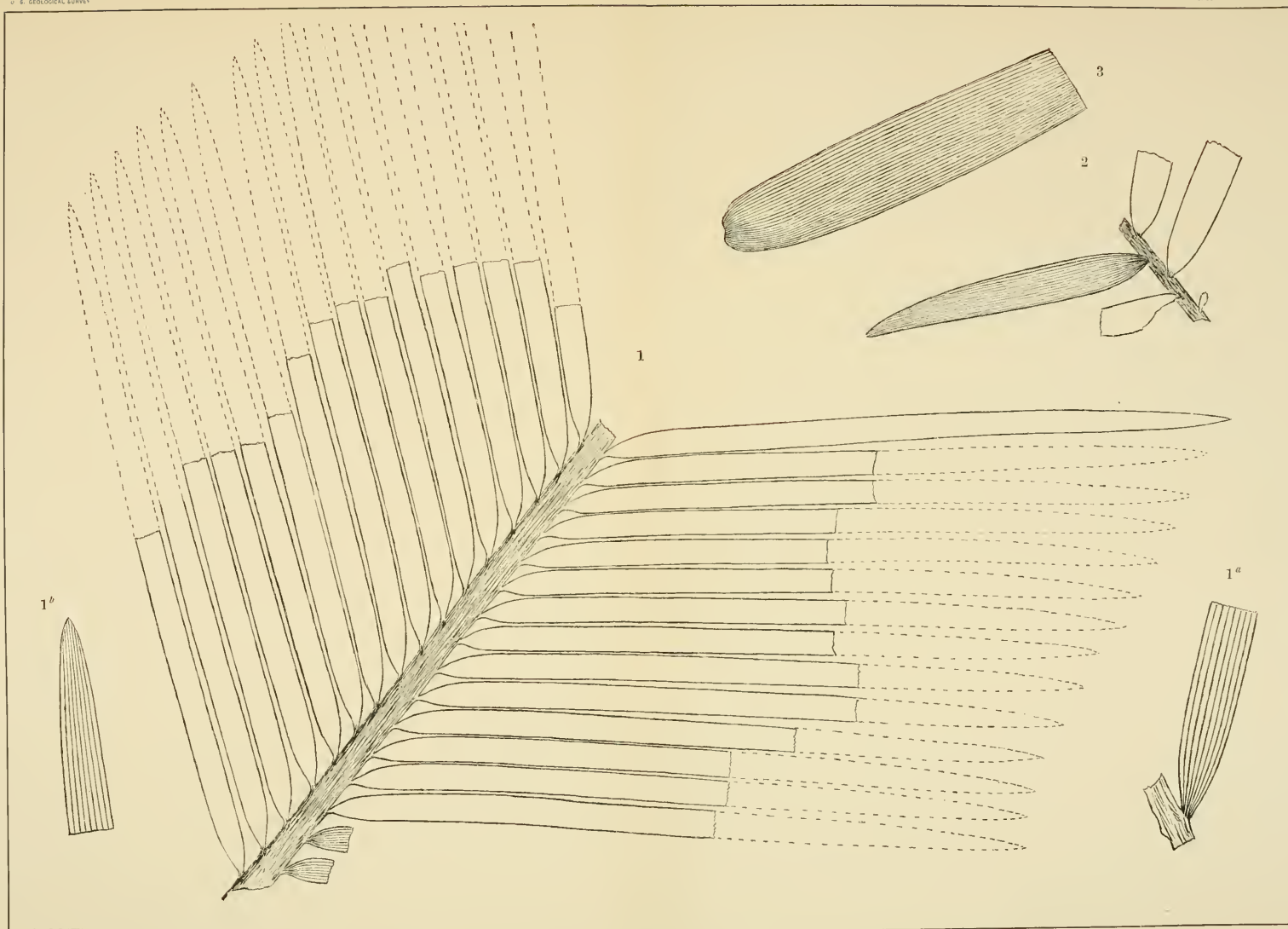


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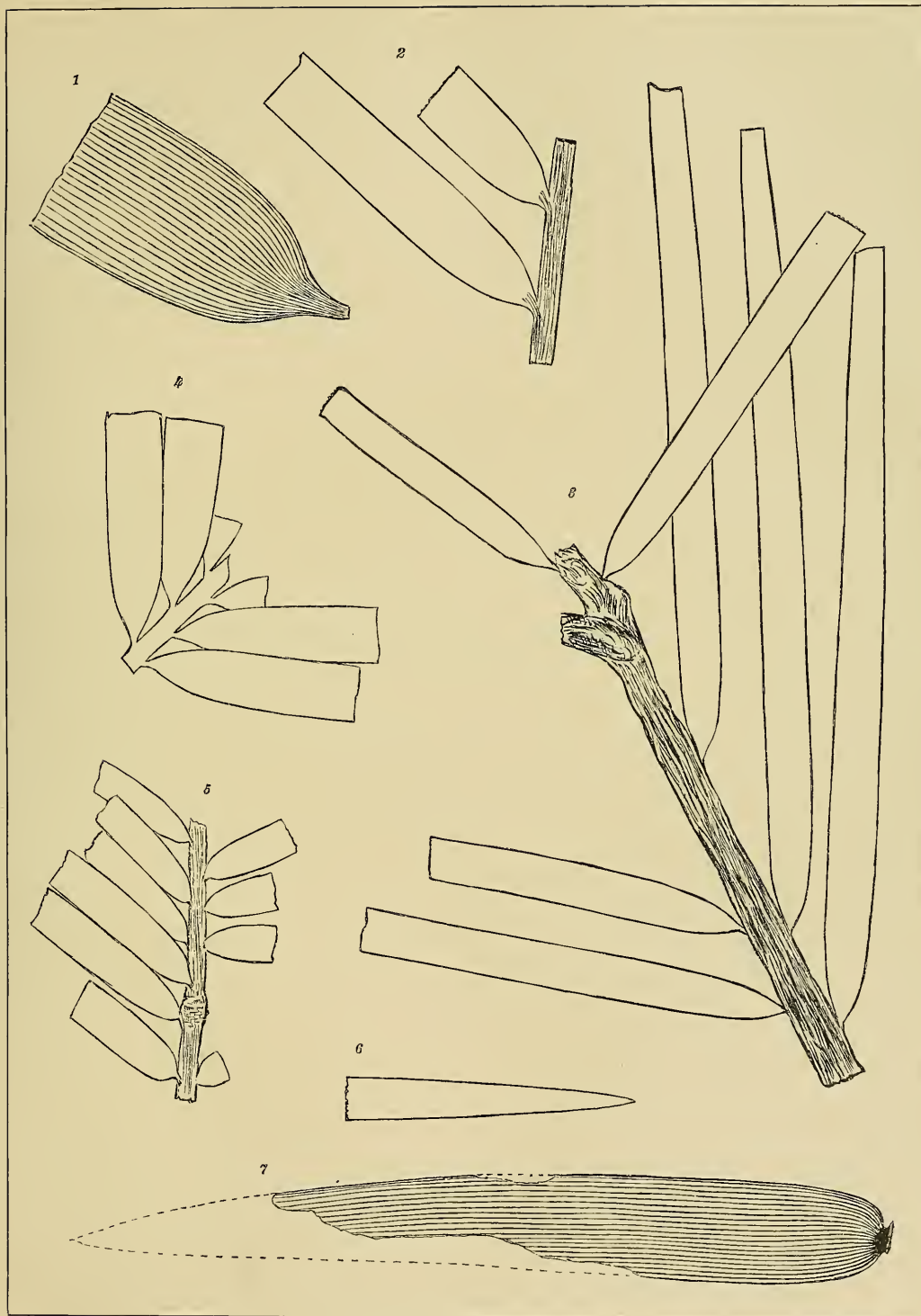


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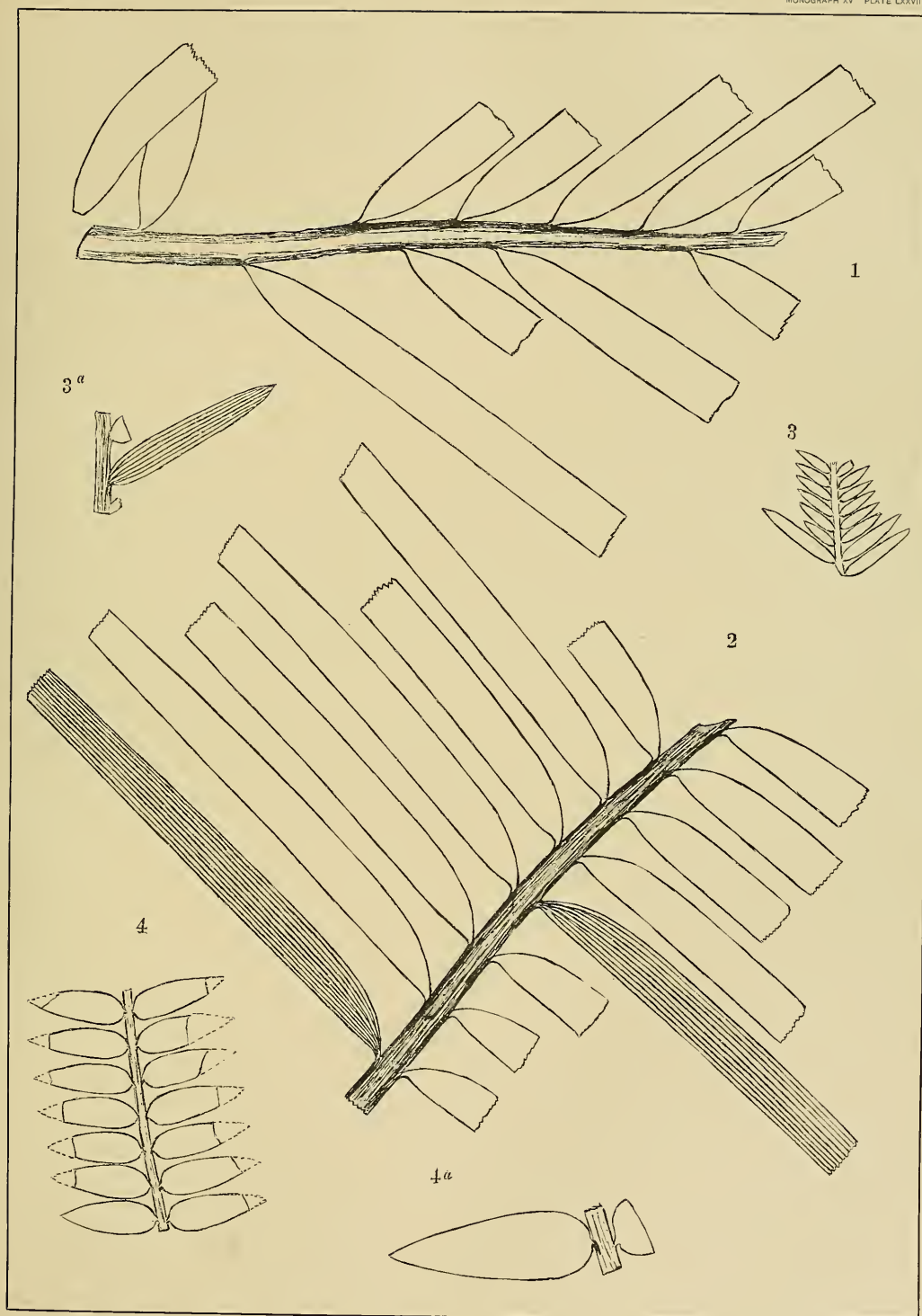


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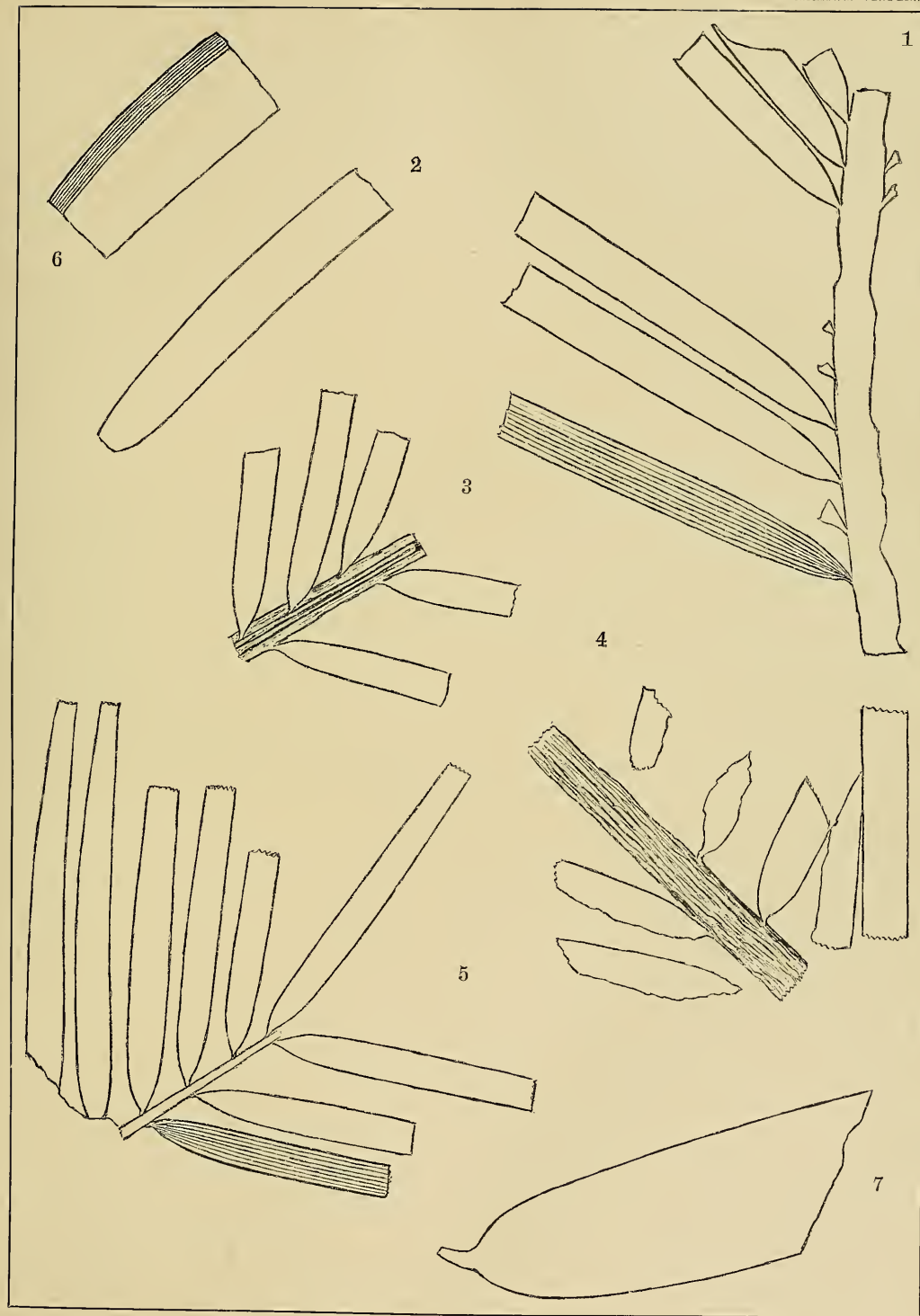


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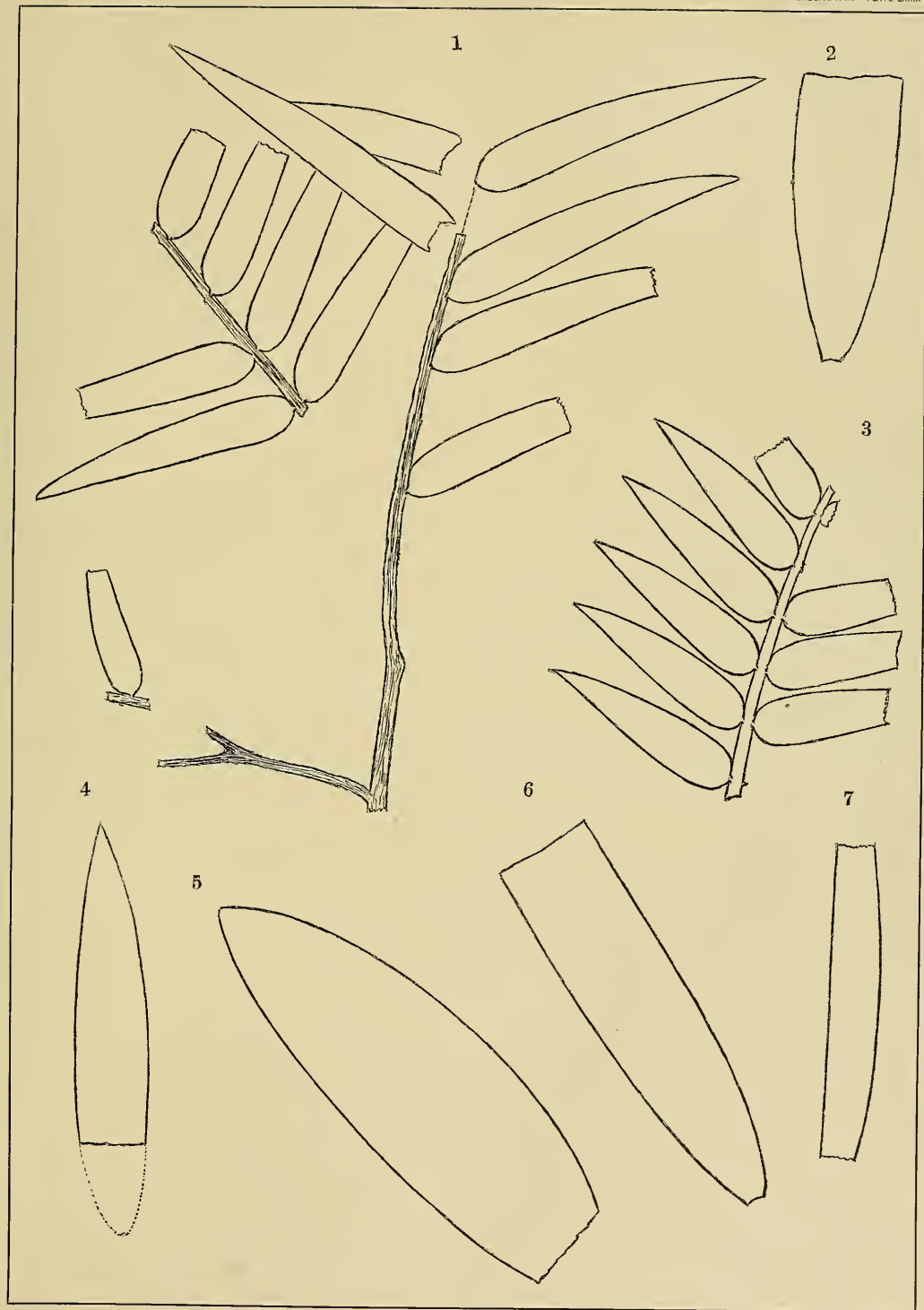


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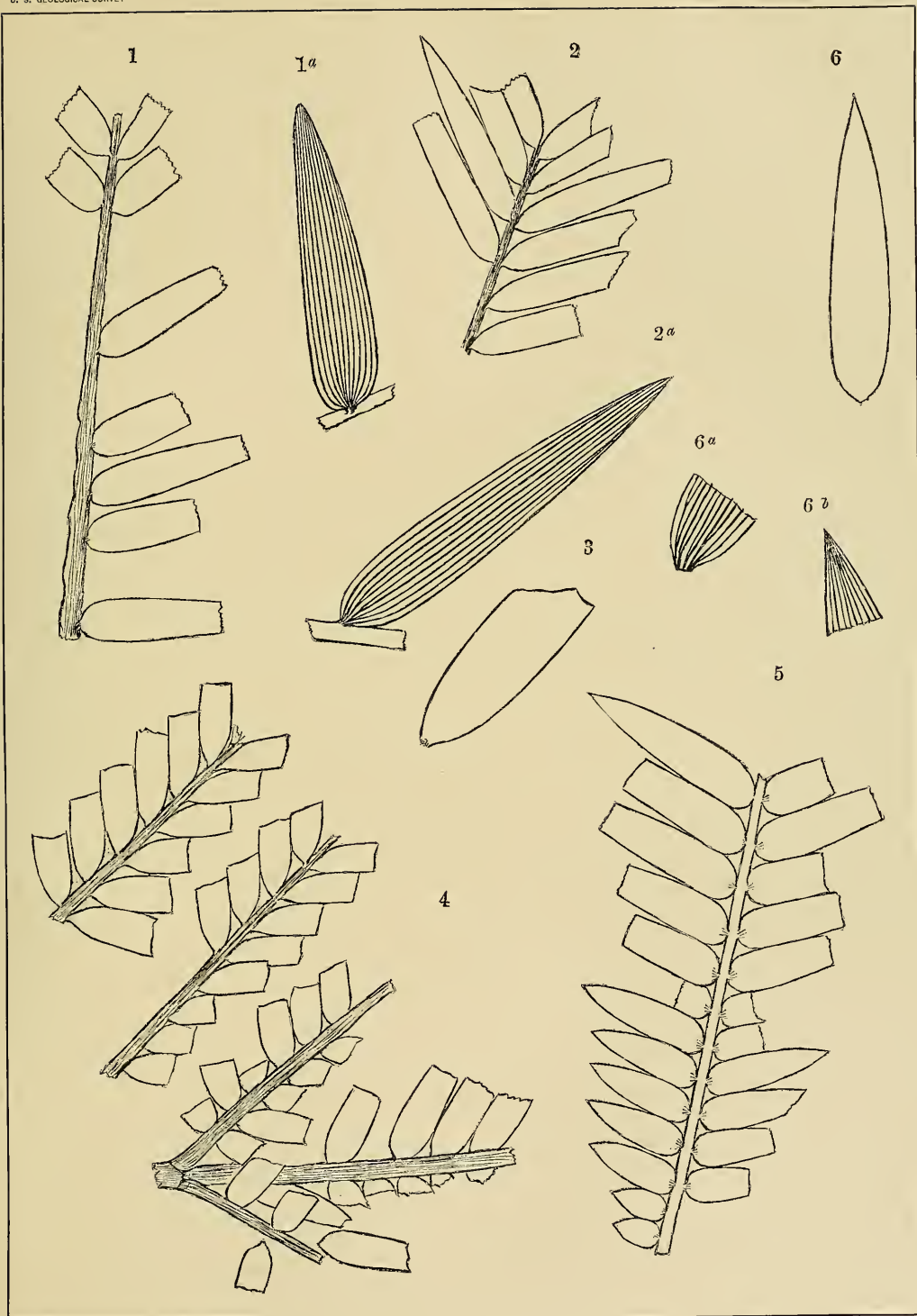


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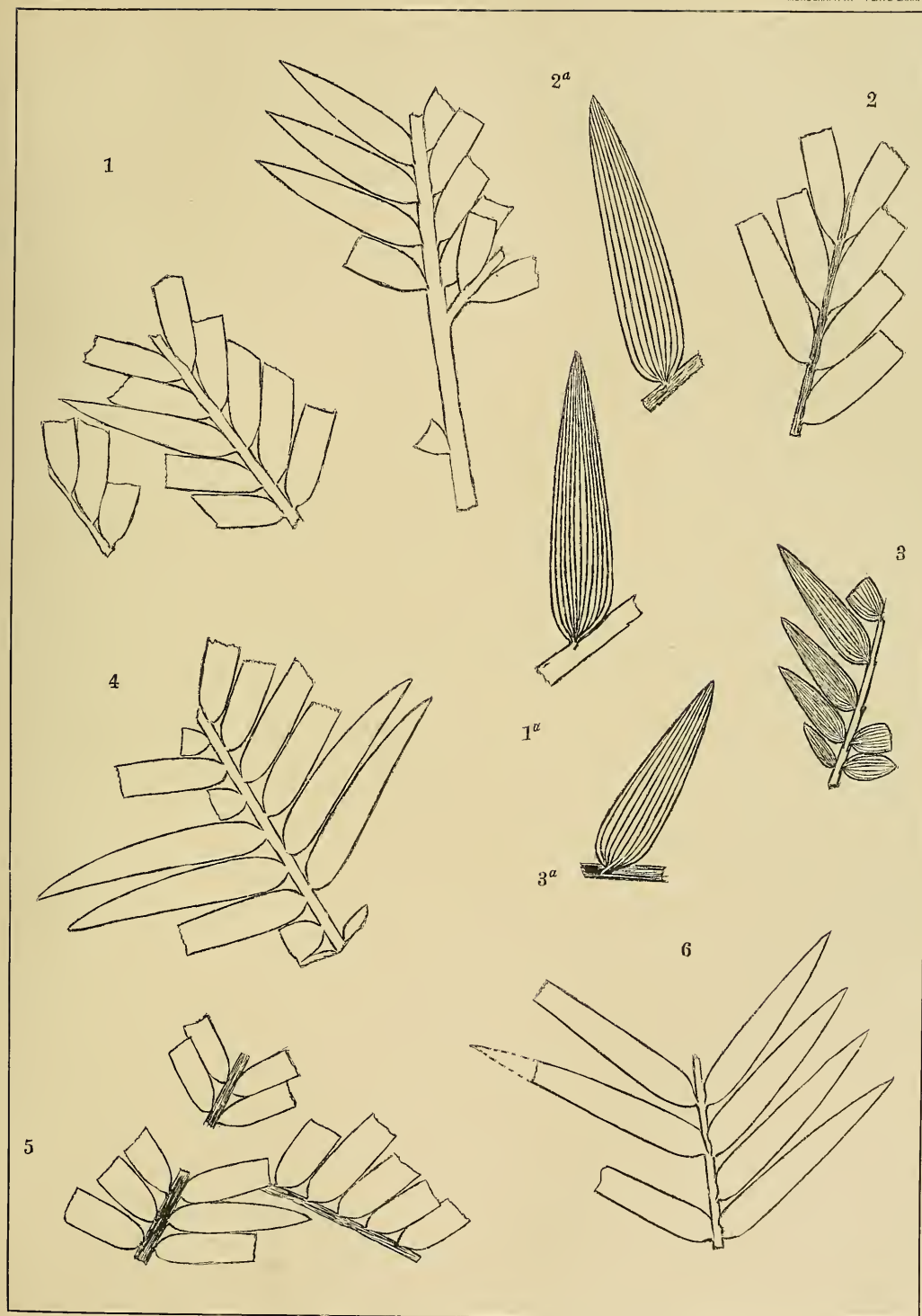


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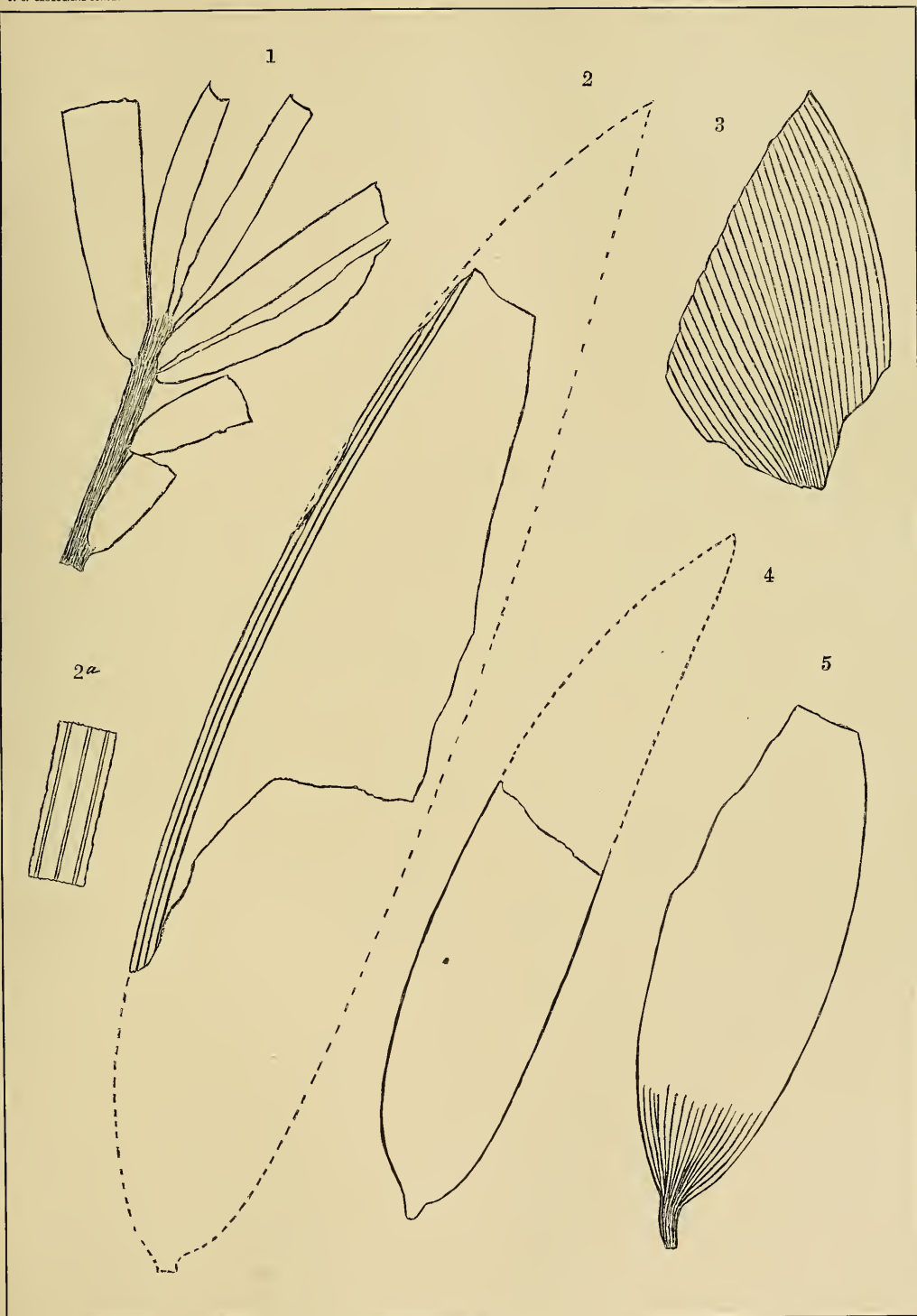
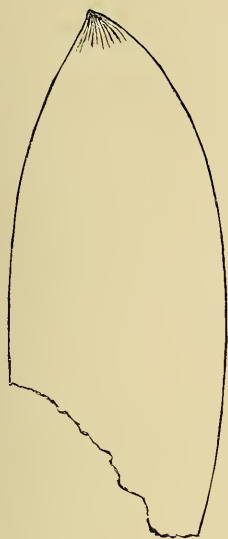


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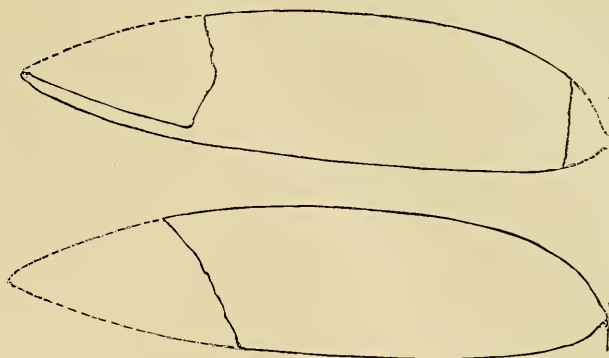
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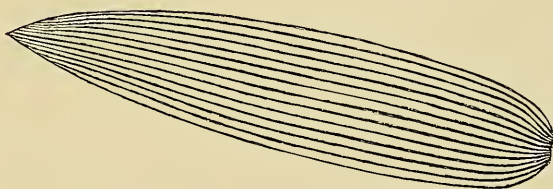
1



2



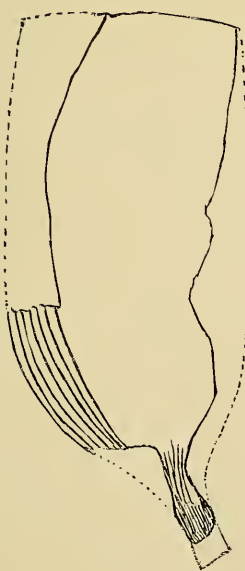
3



4



5



6



7

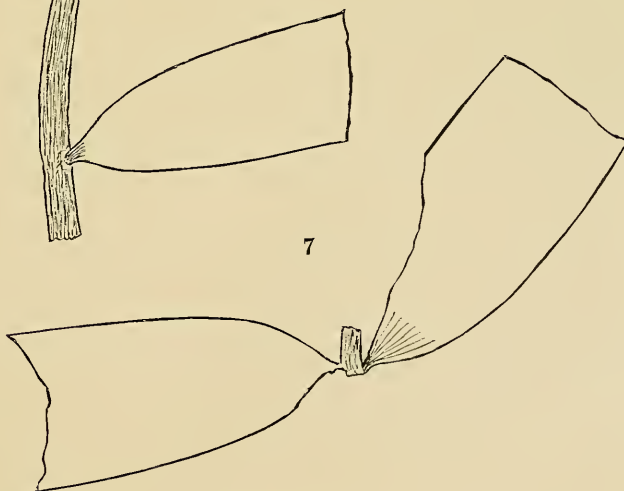


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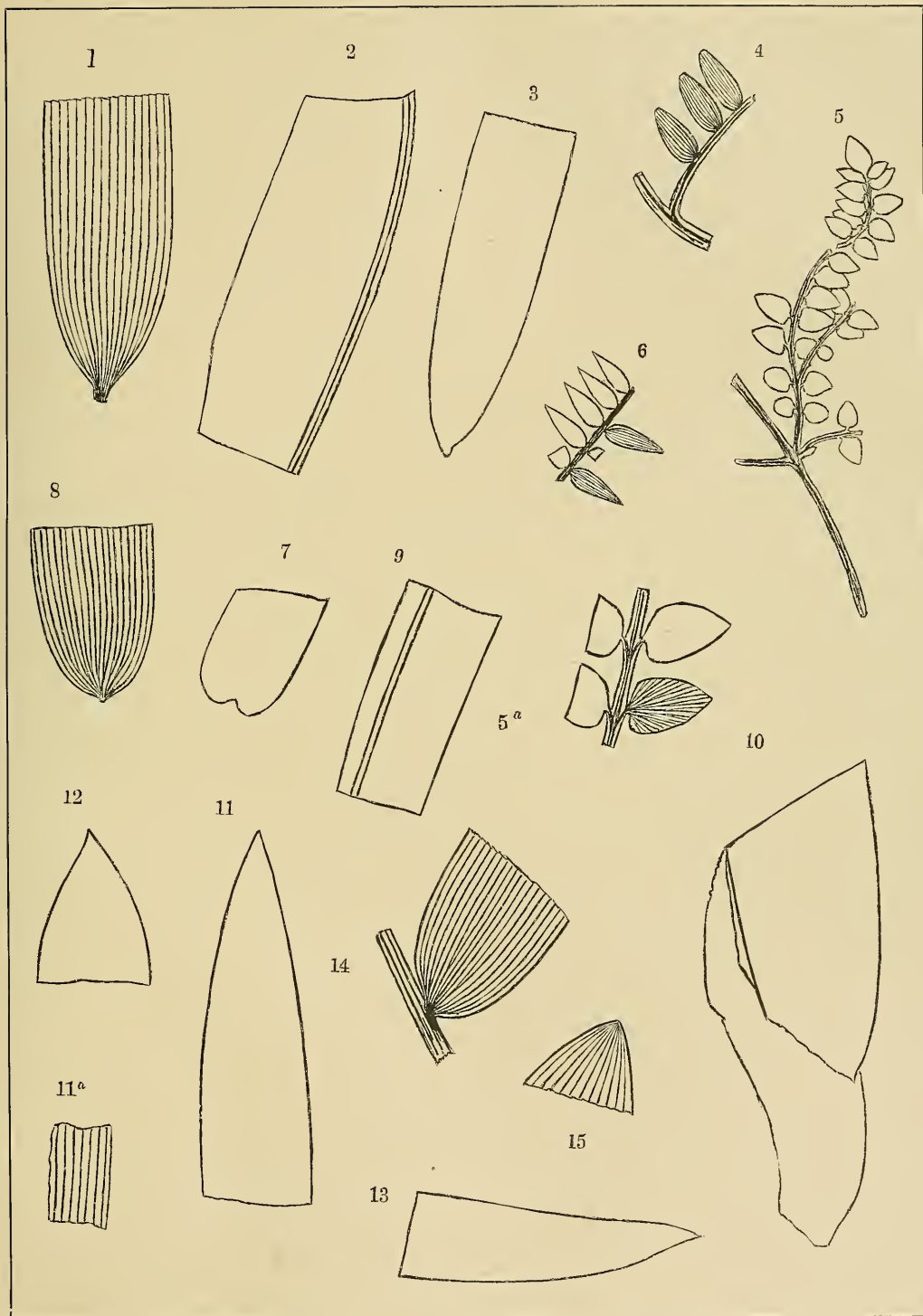


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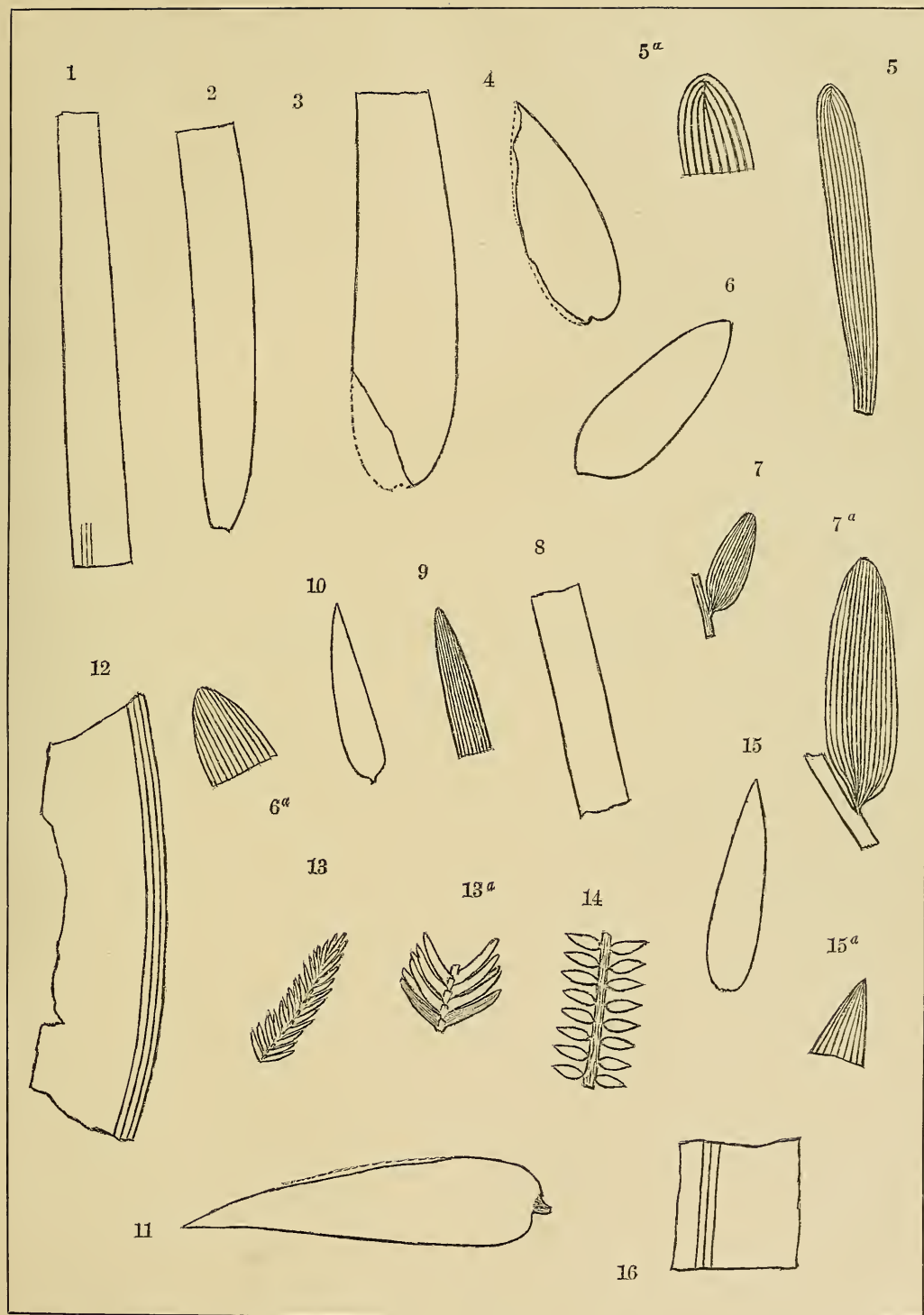


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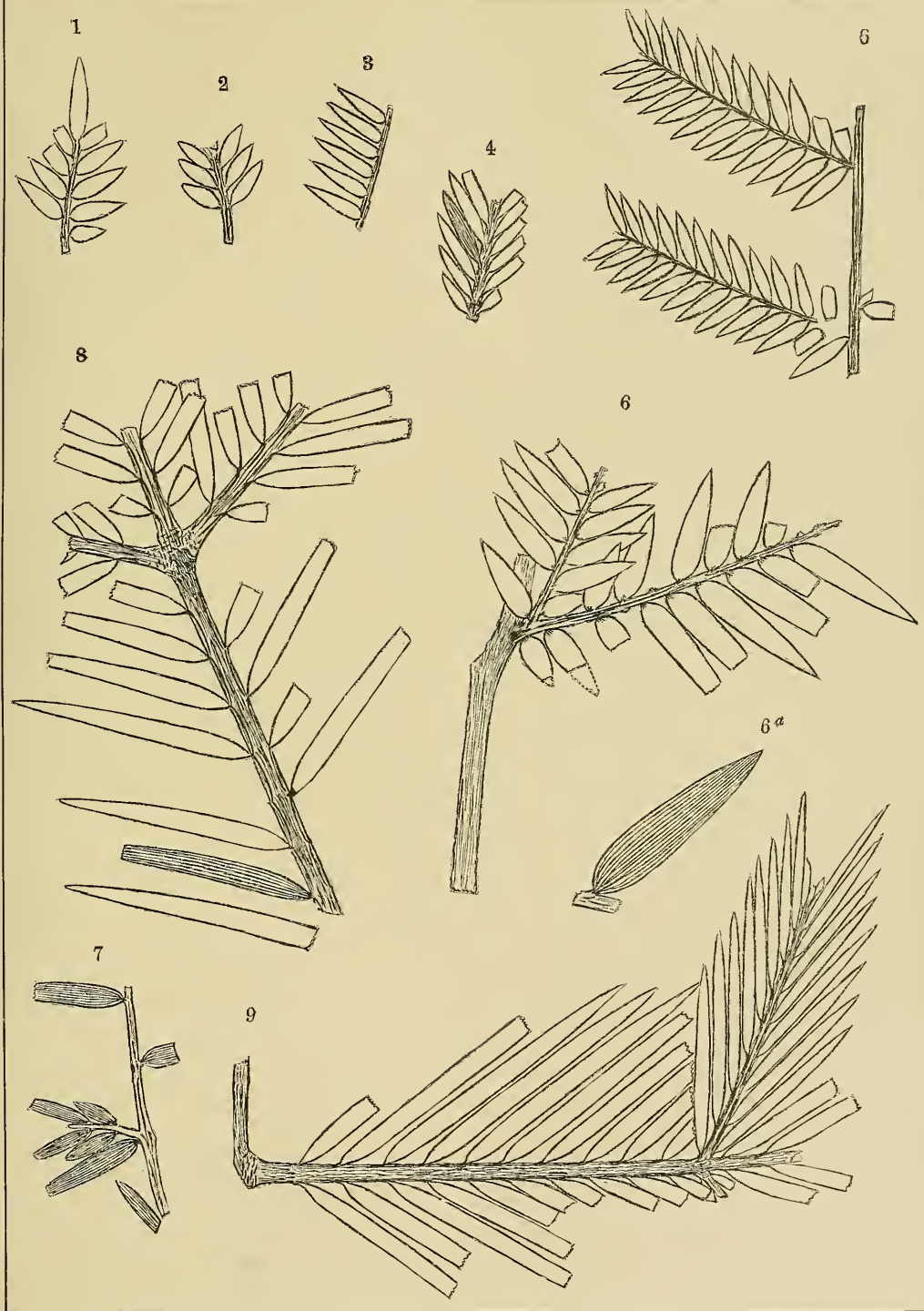


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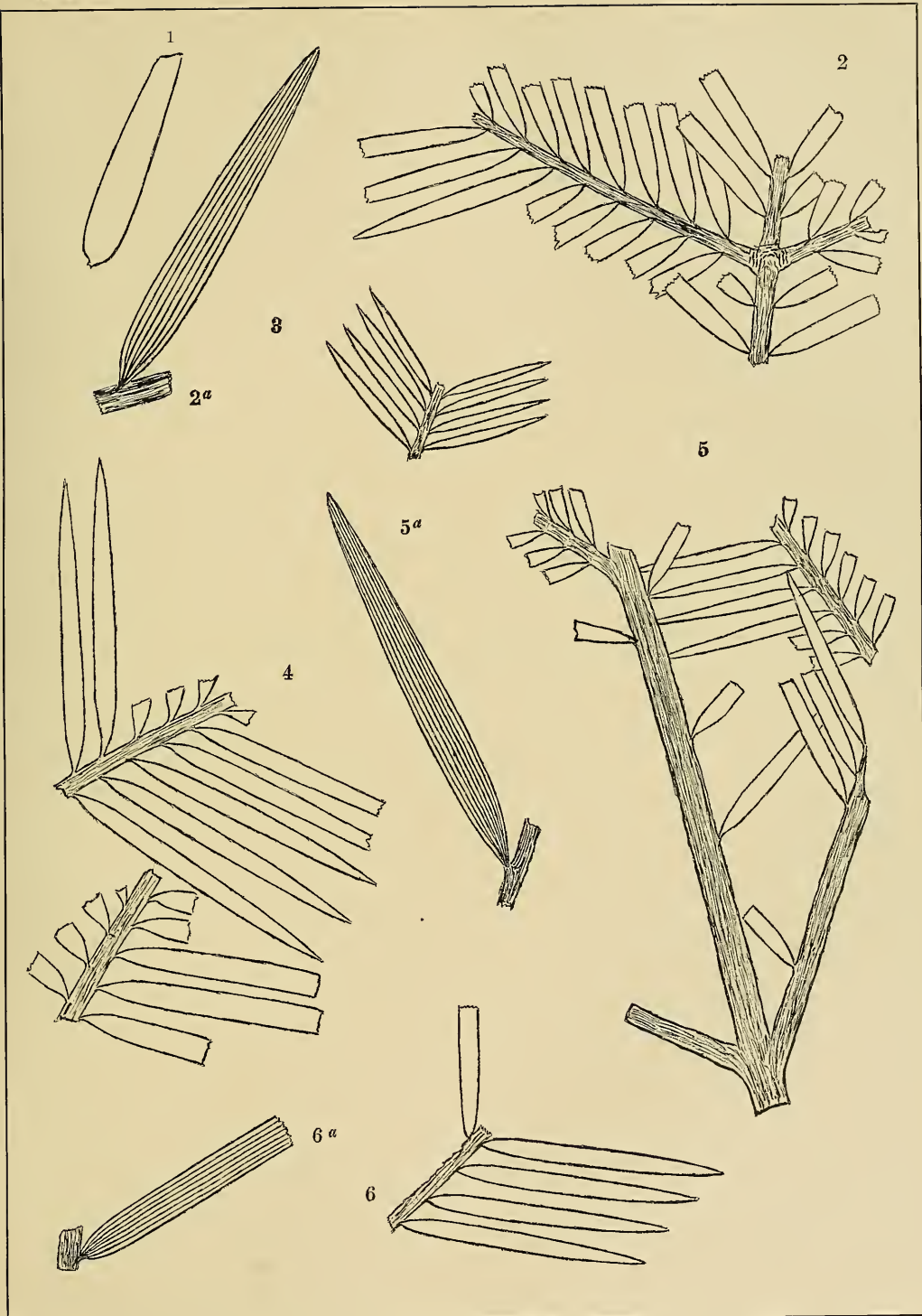


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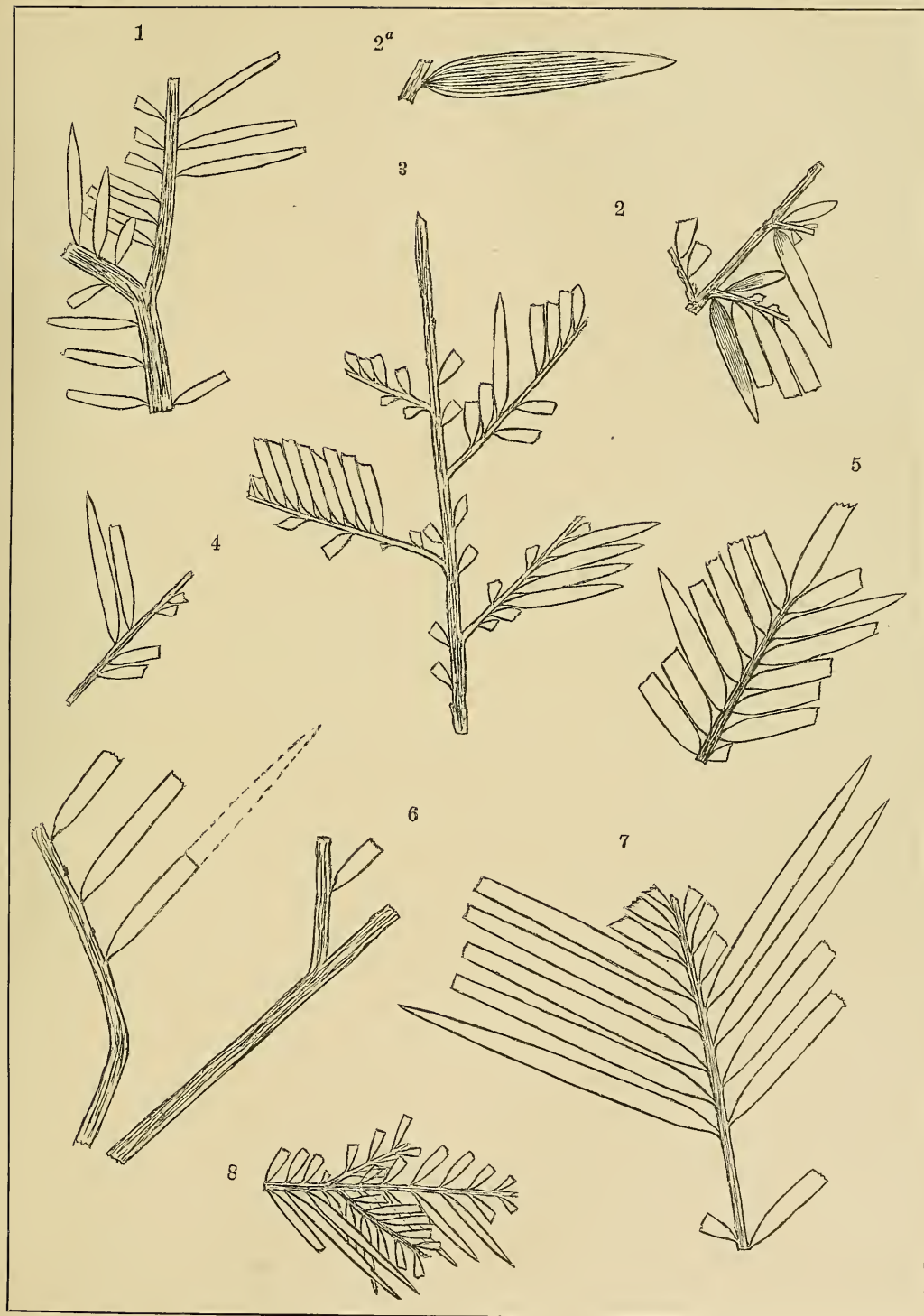


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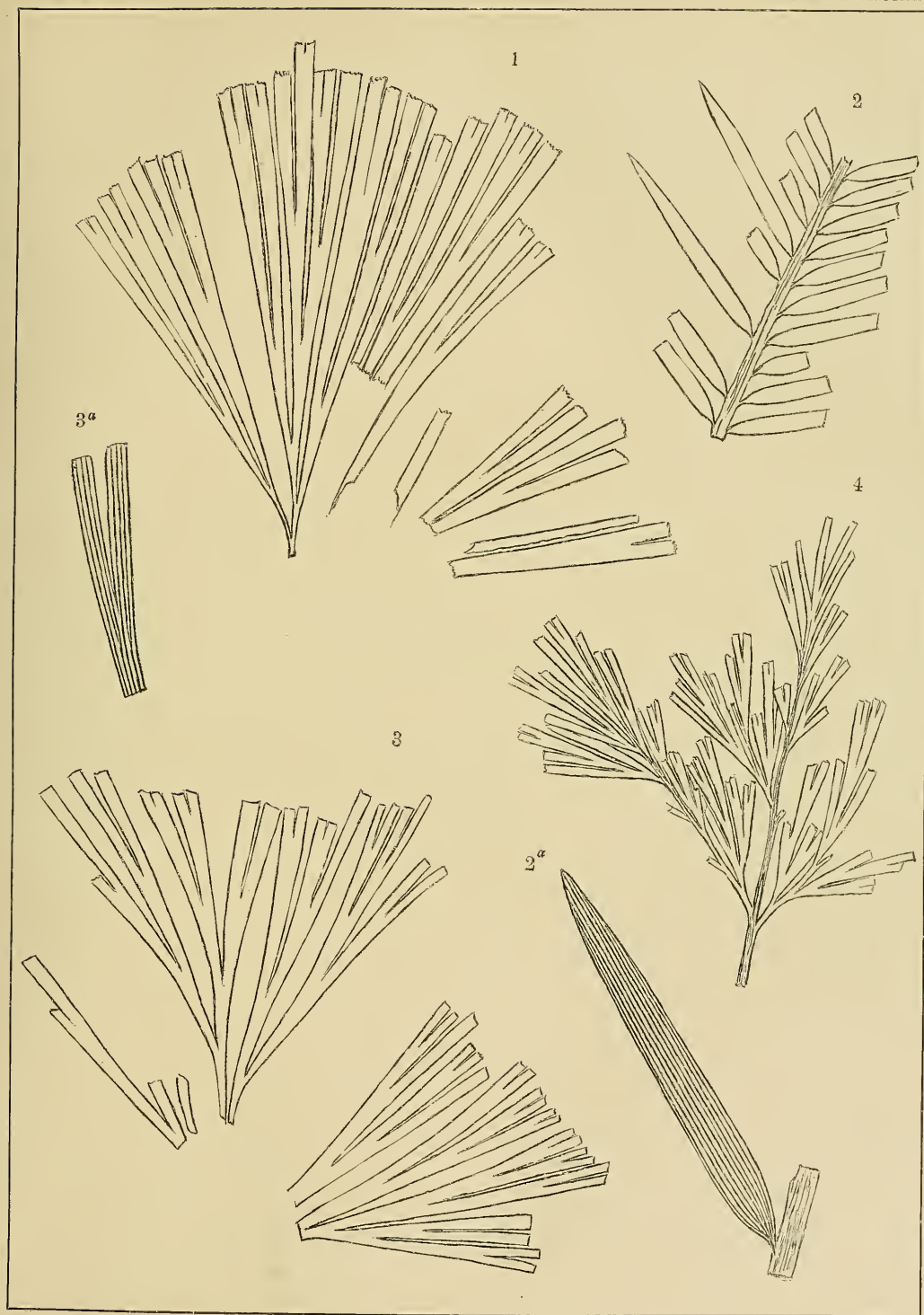


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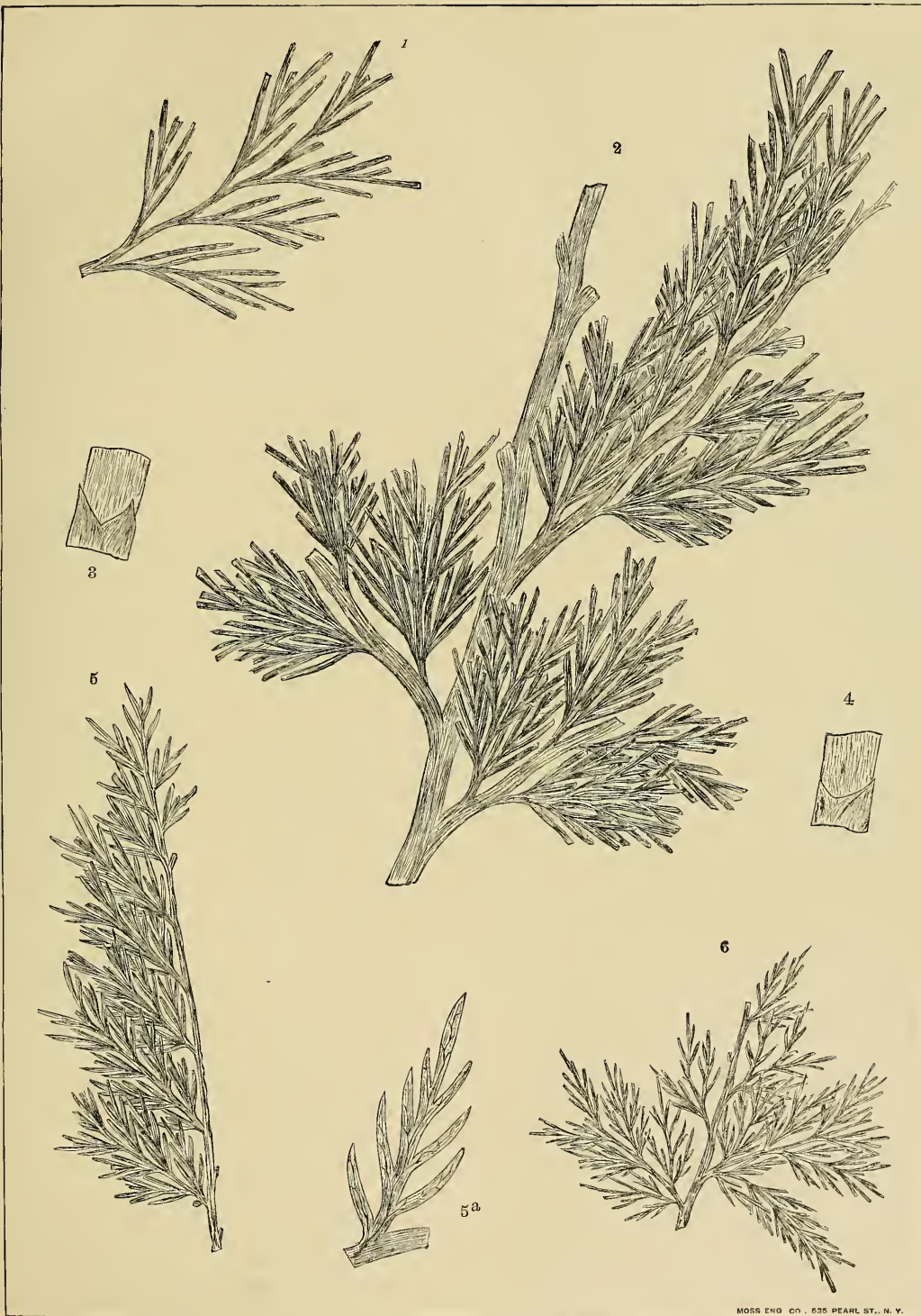


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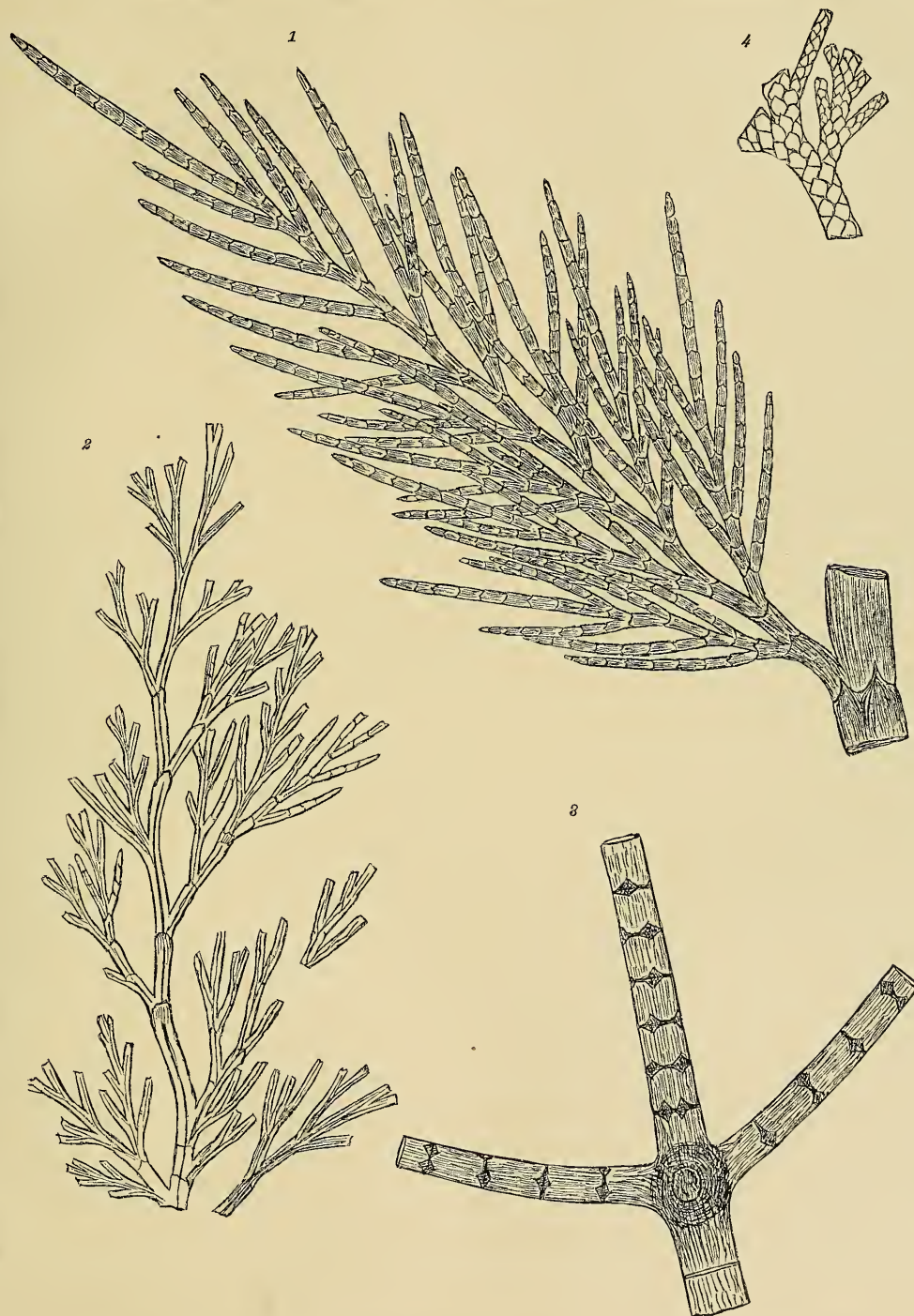


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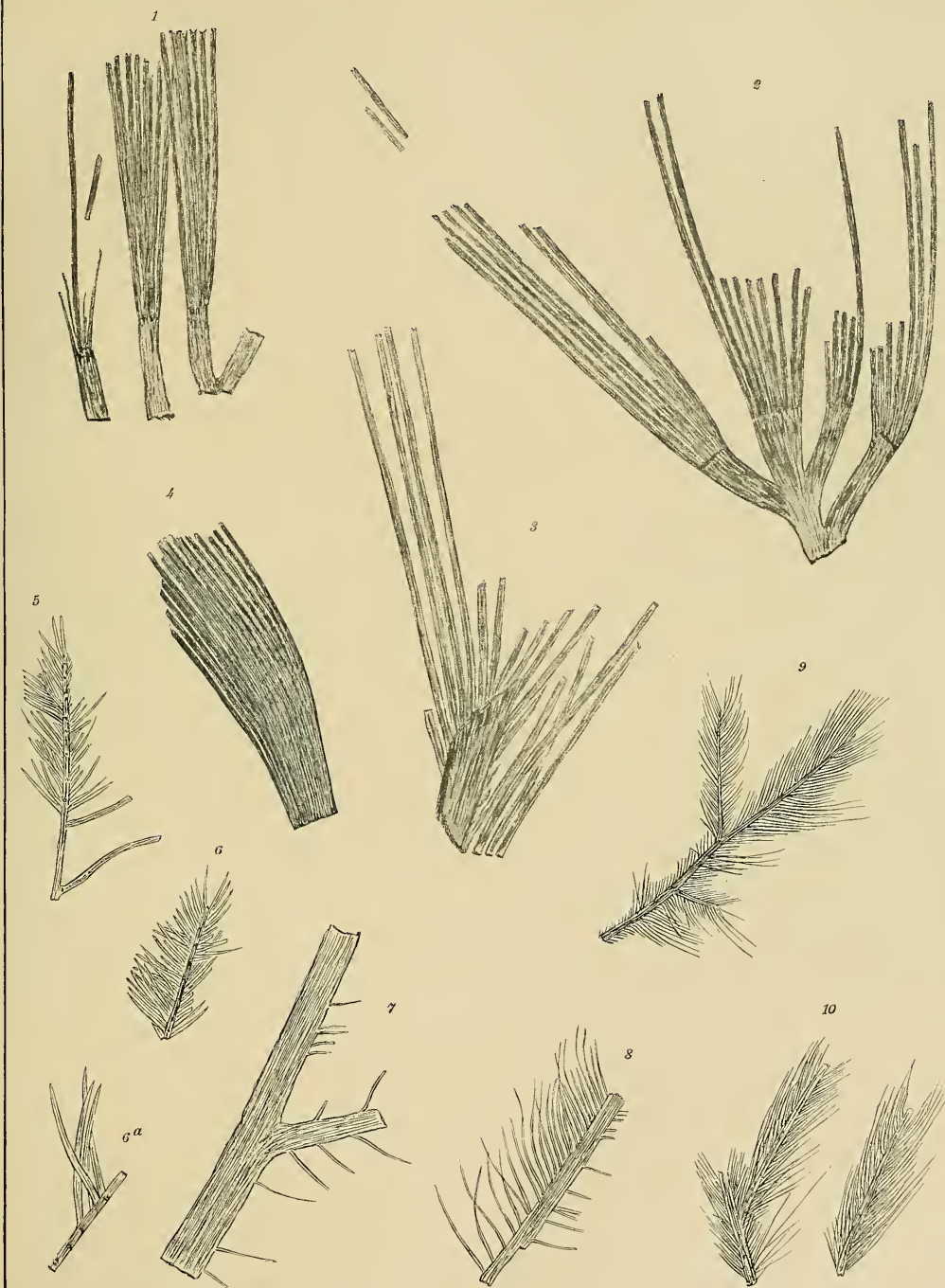


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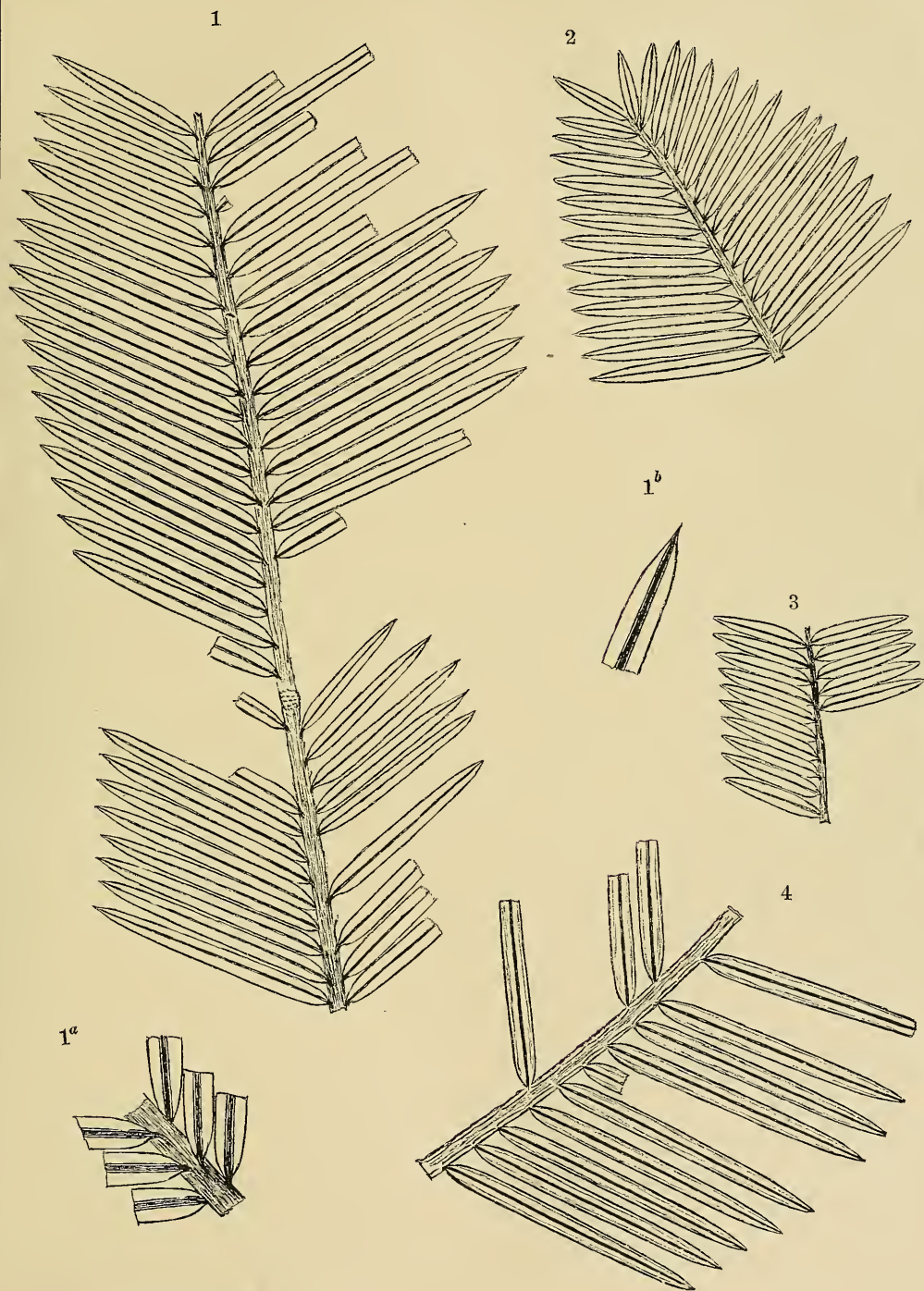


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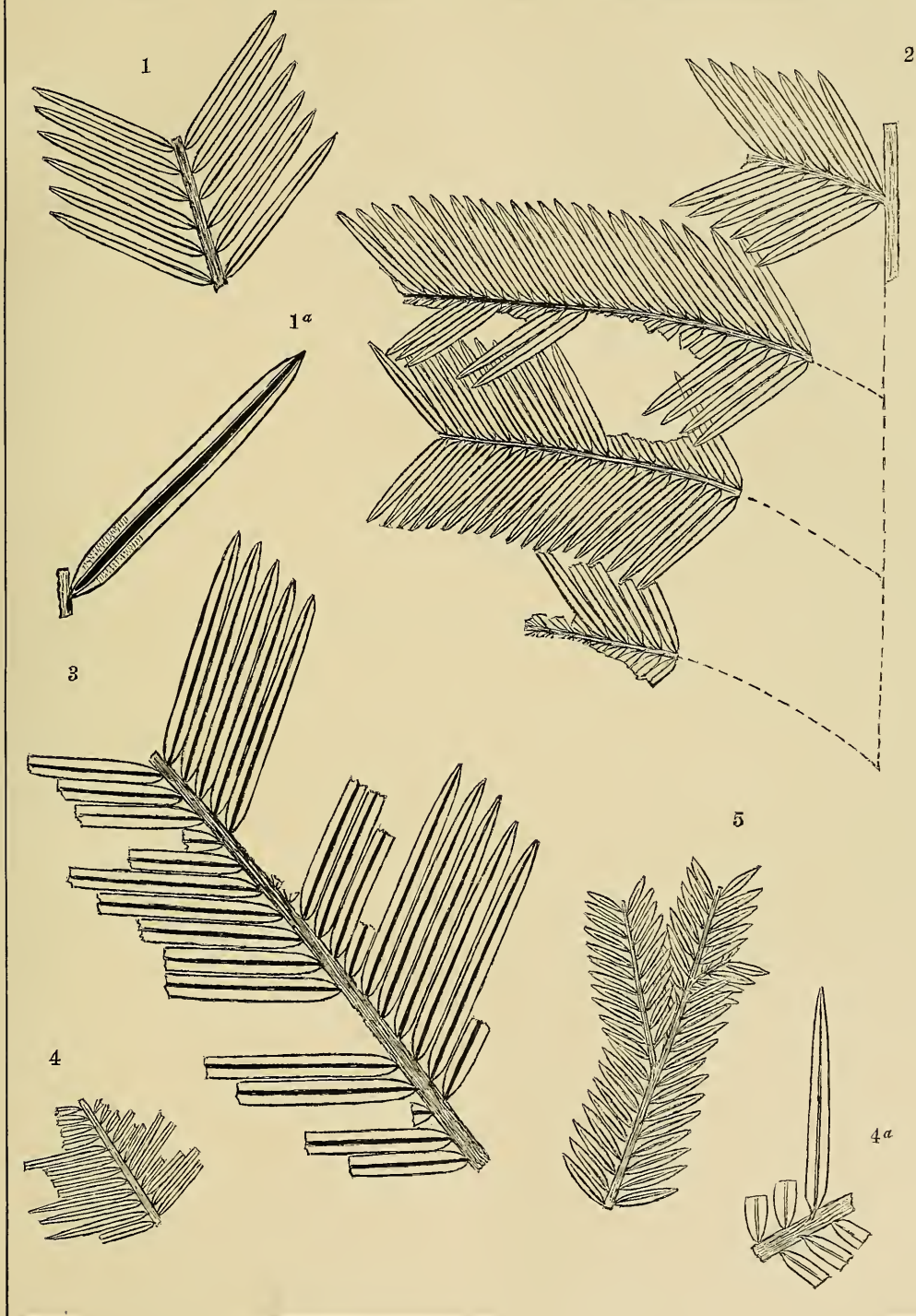


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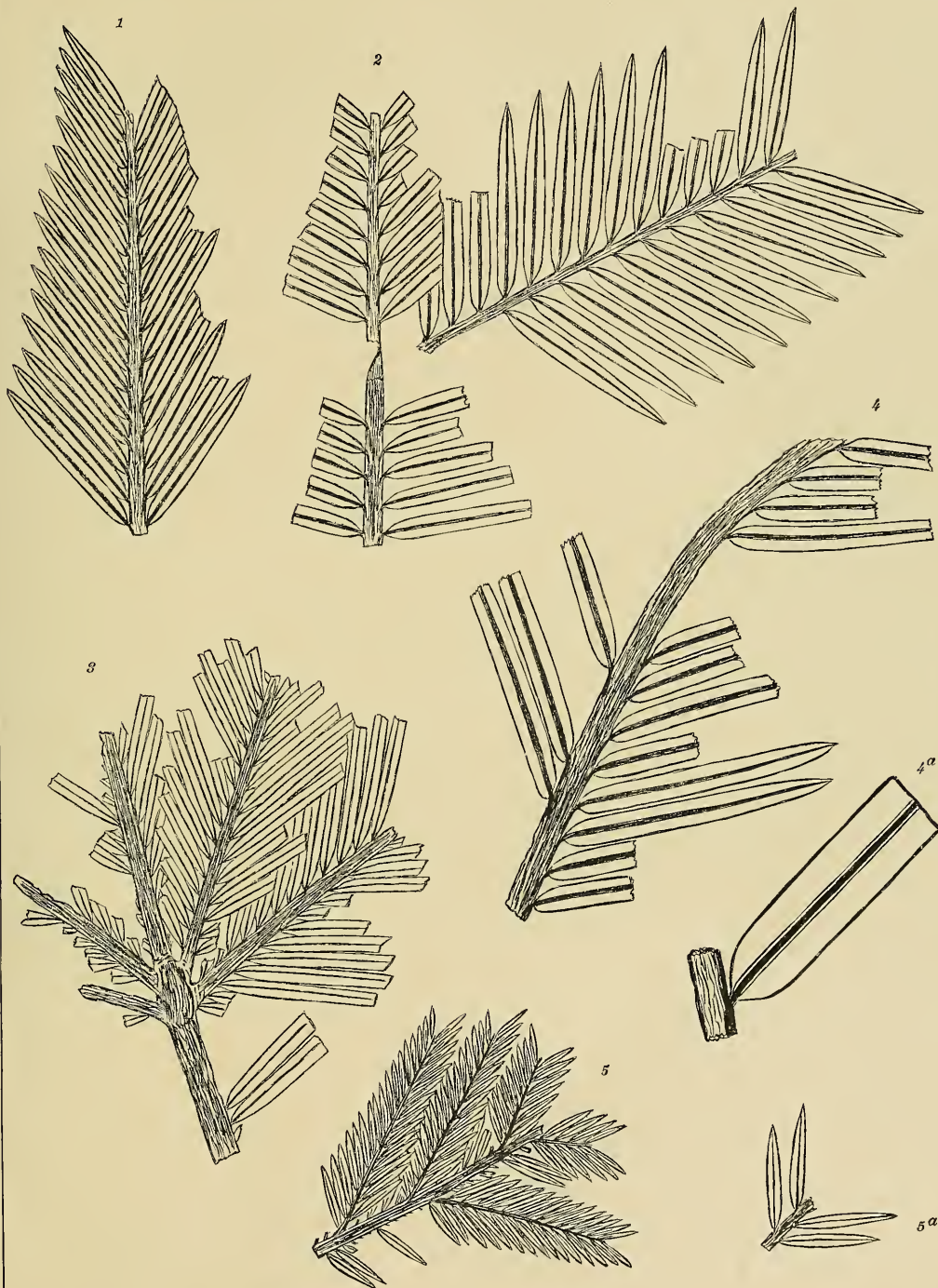


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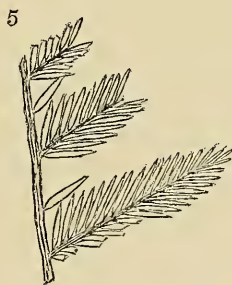
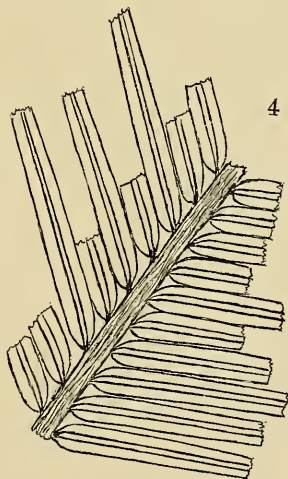
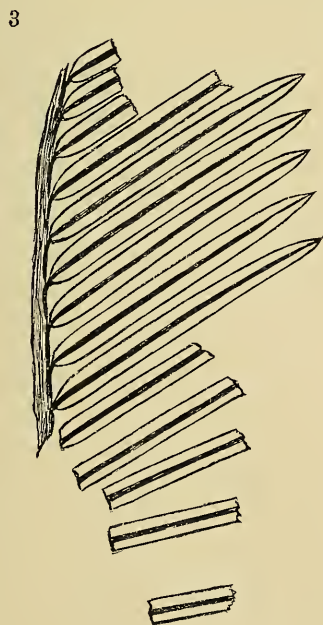
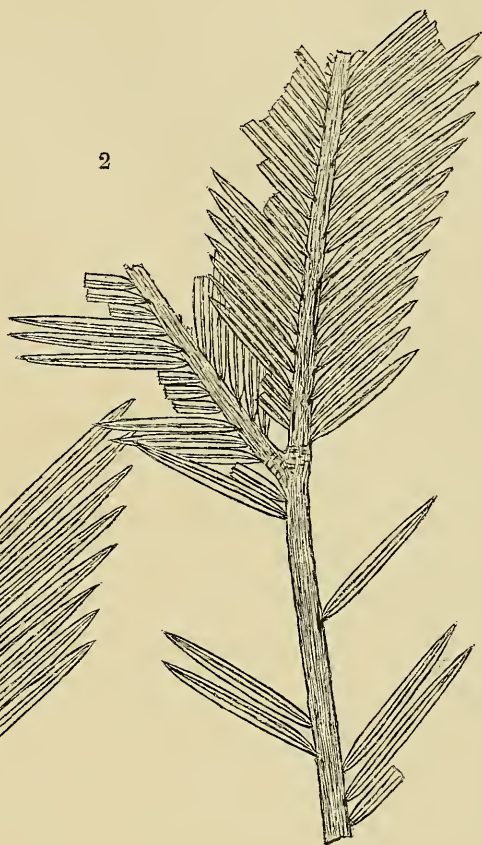
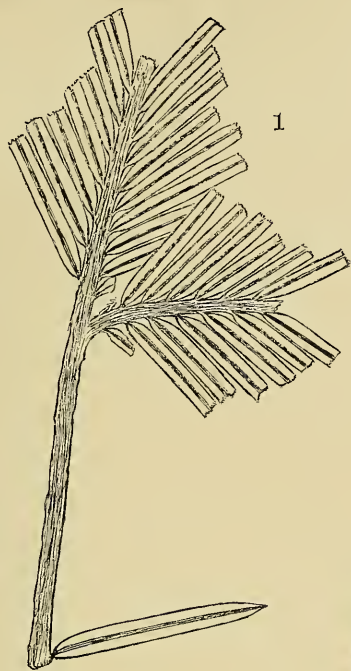


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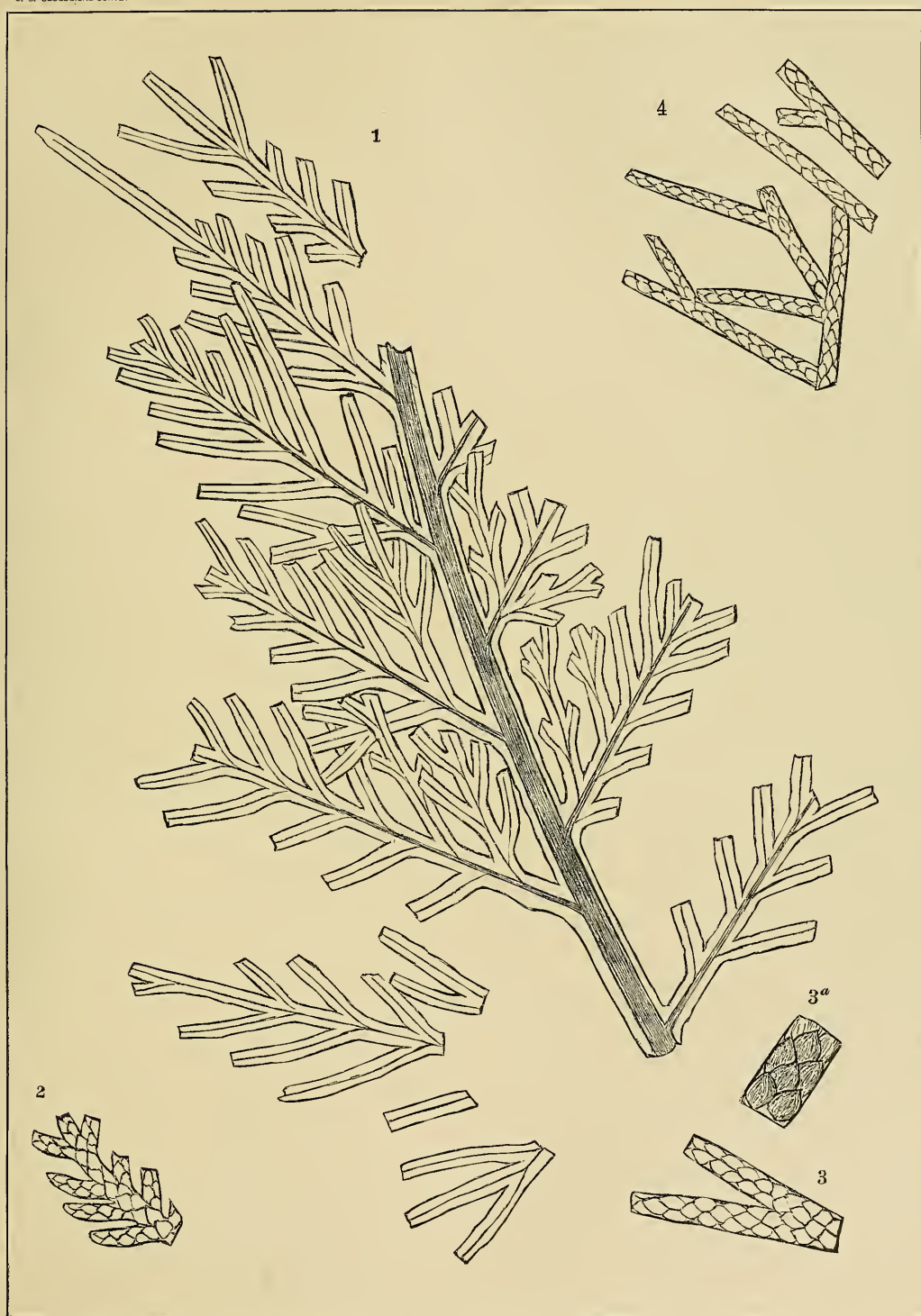


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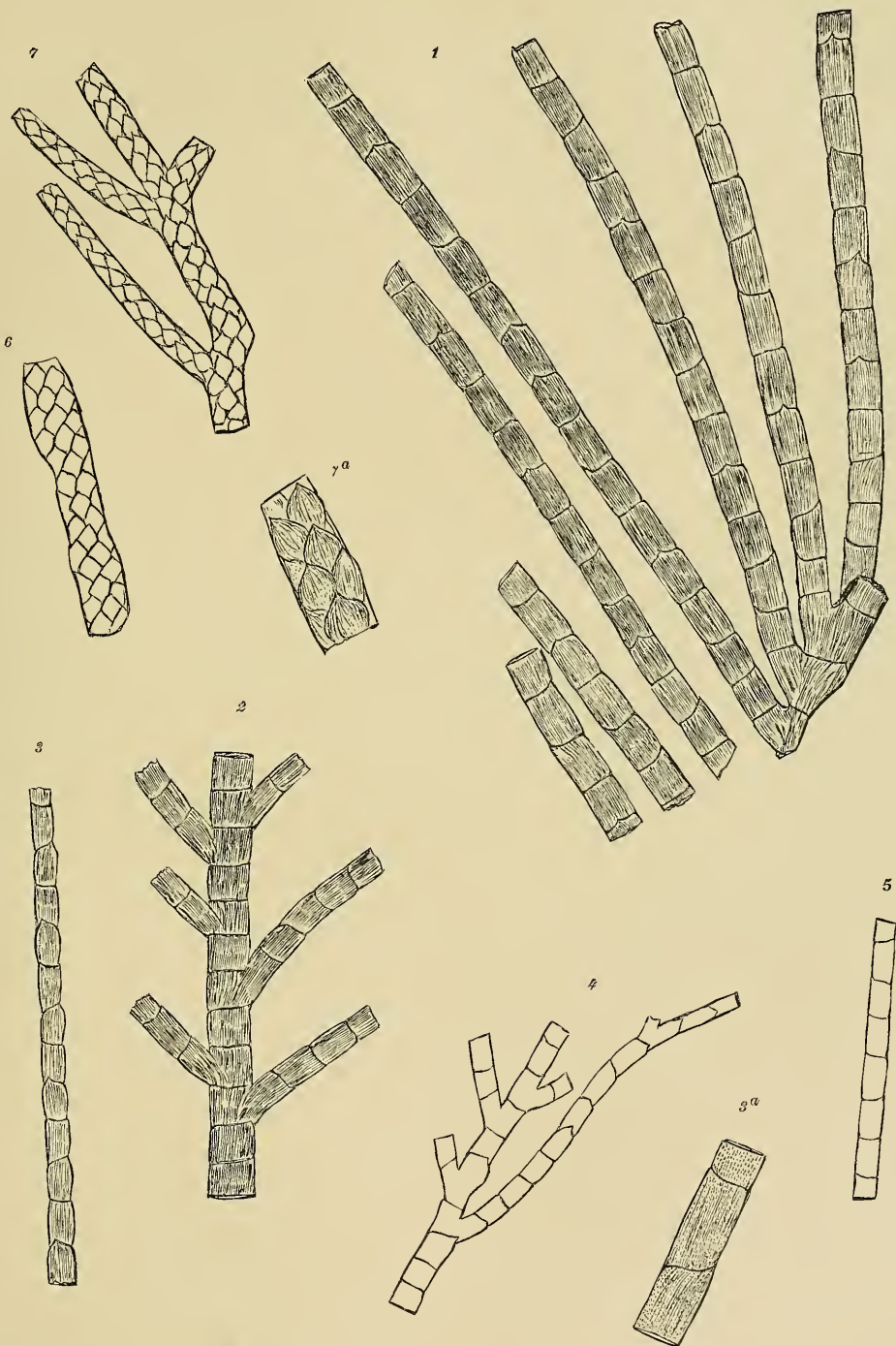


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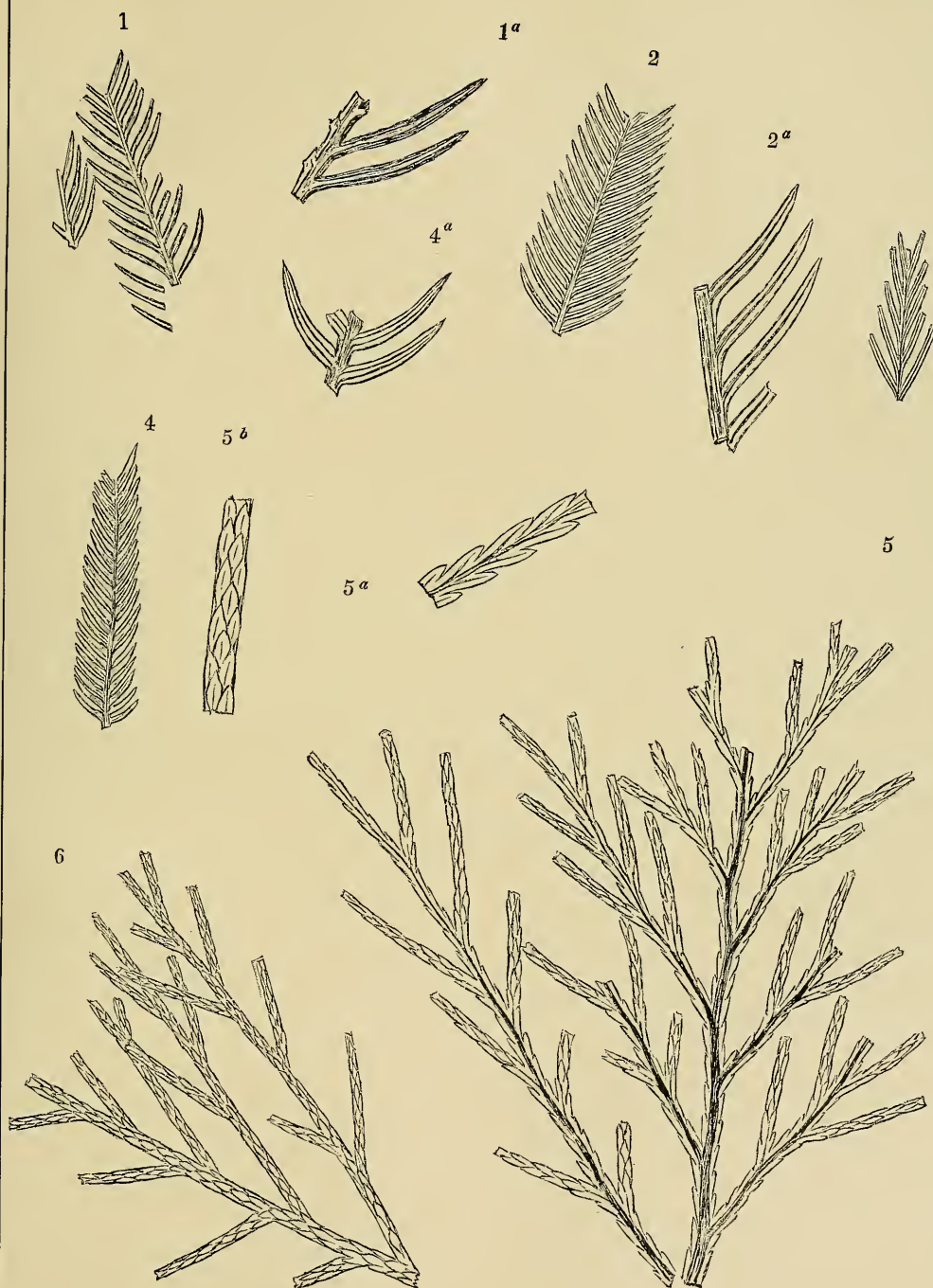


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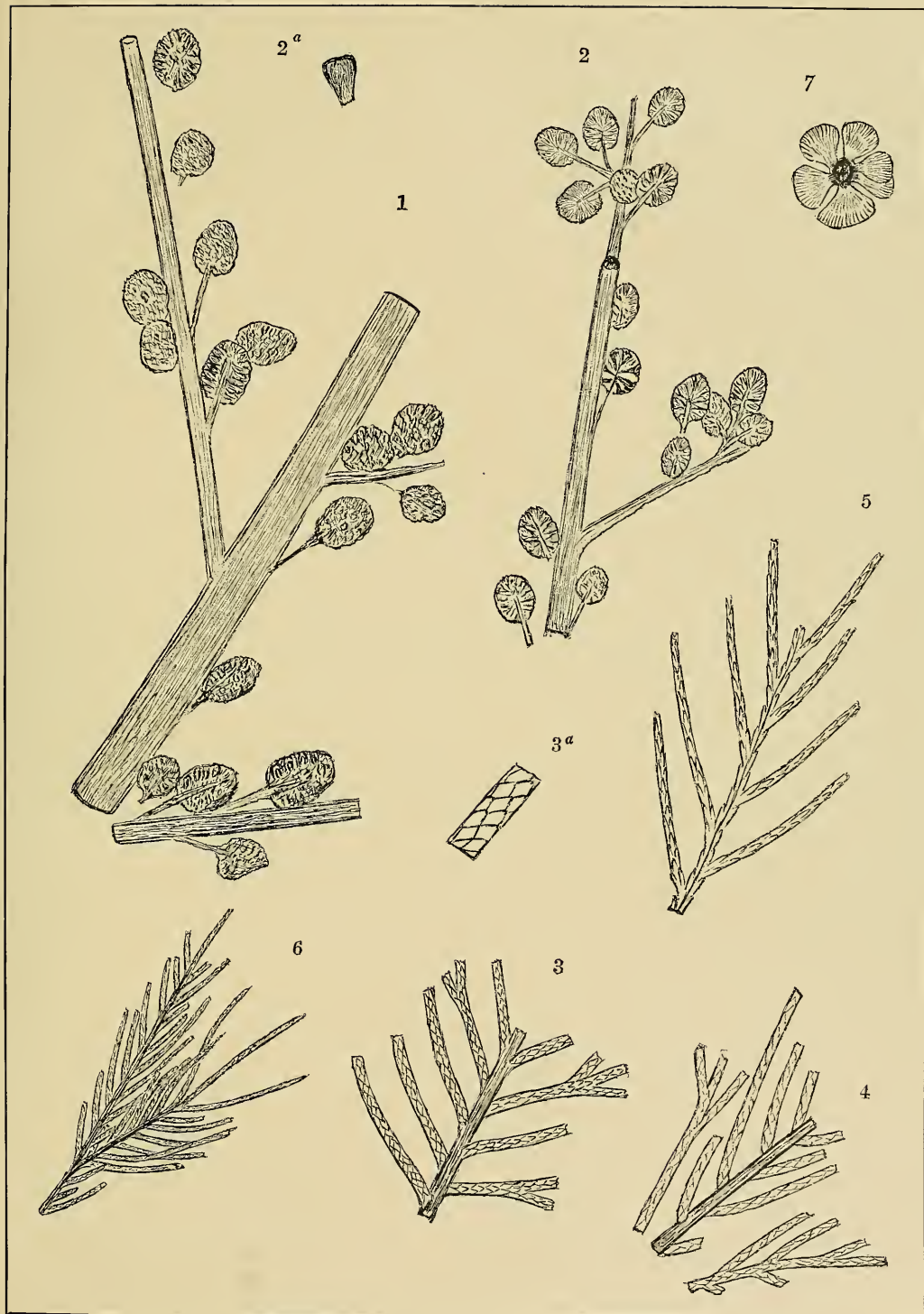


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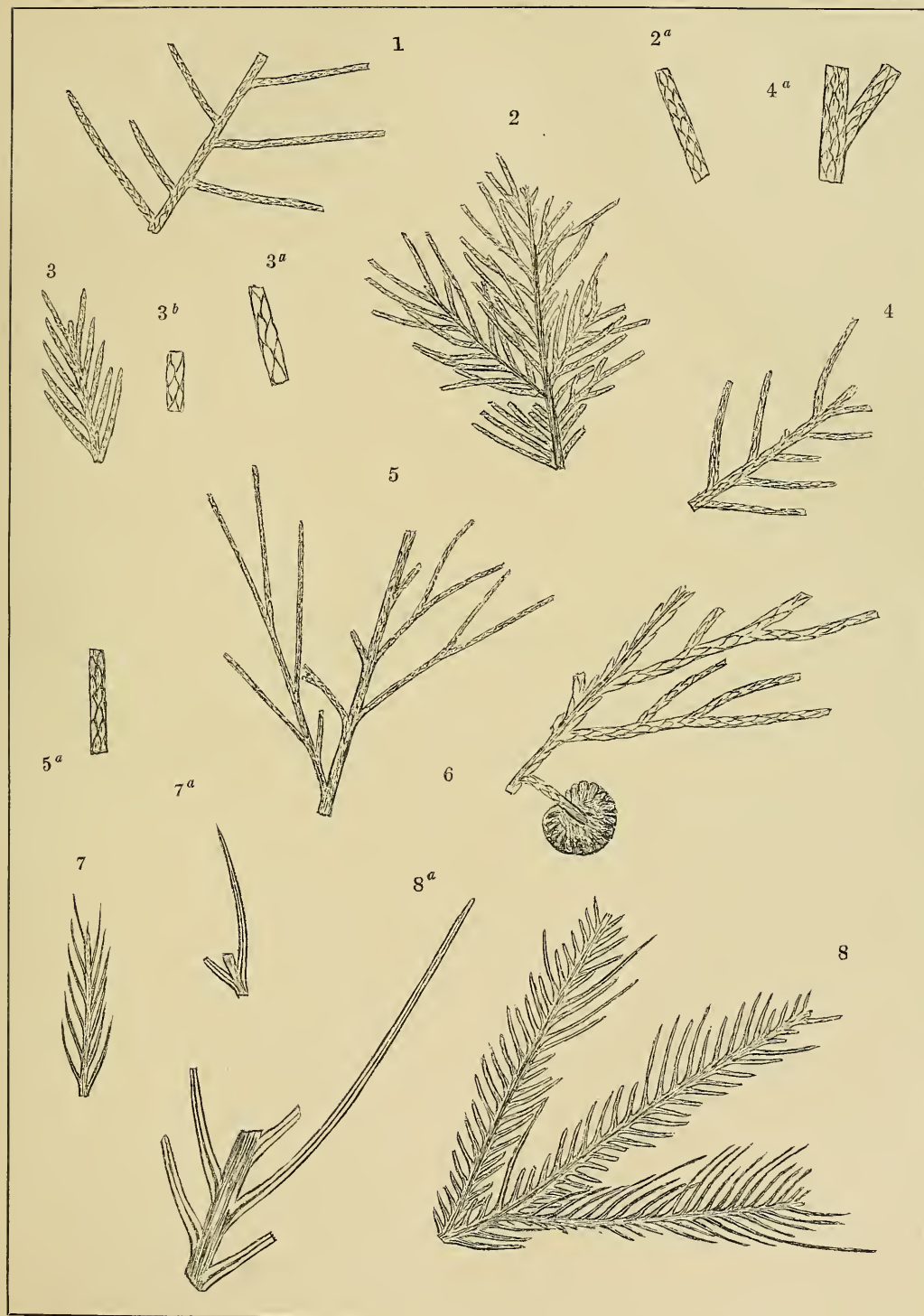


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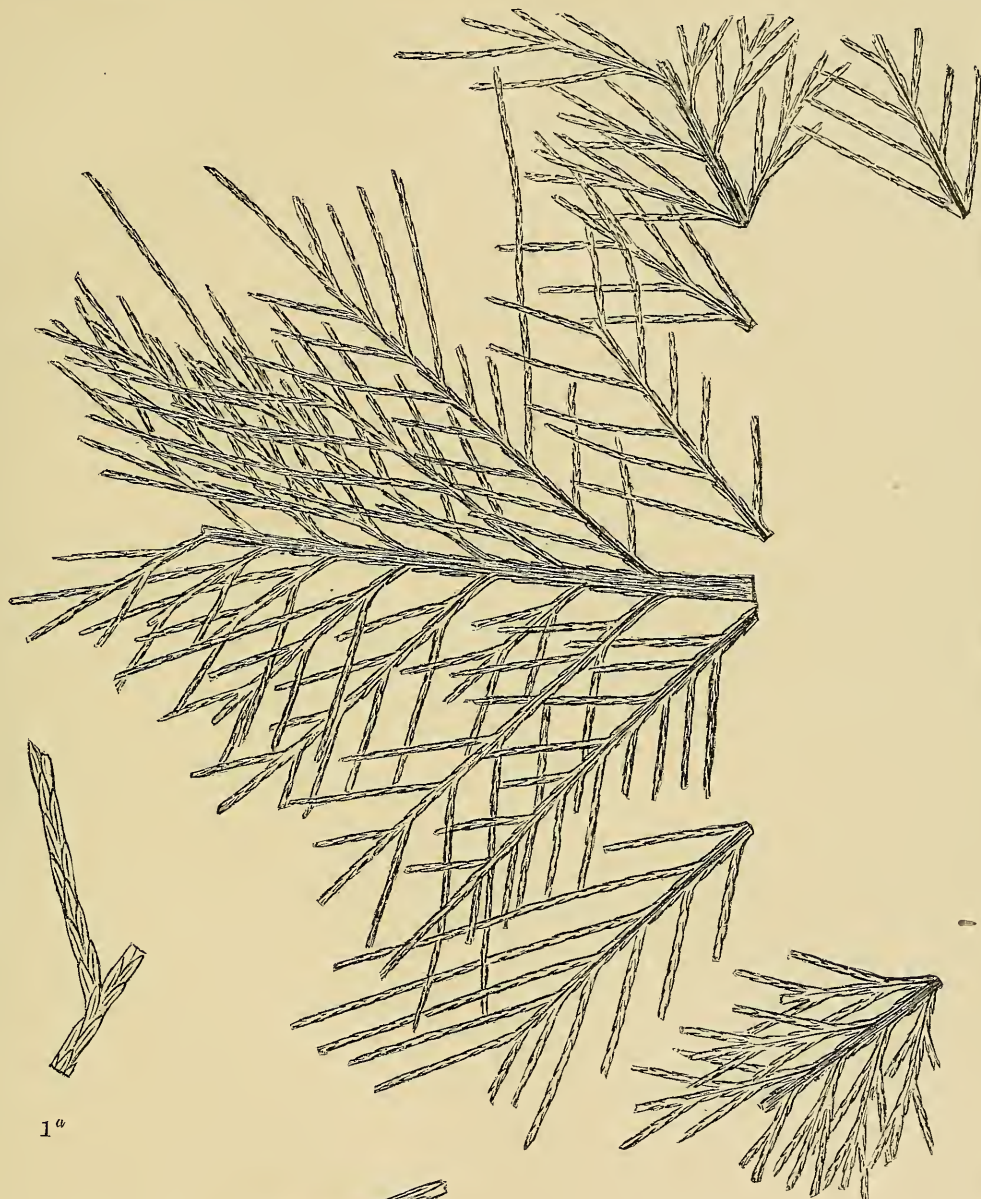


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1^a1^b

2

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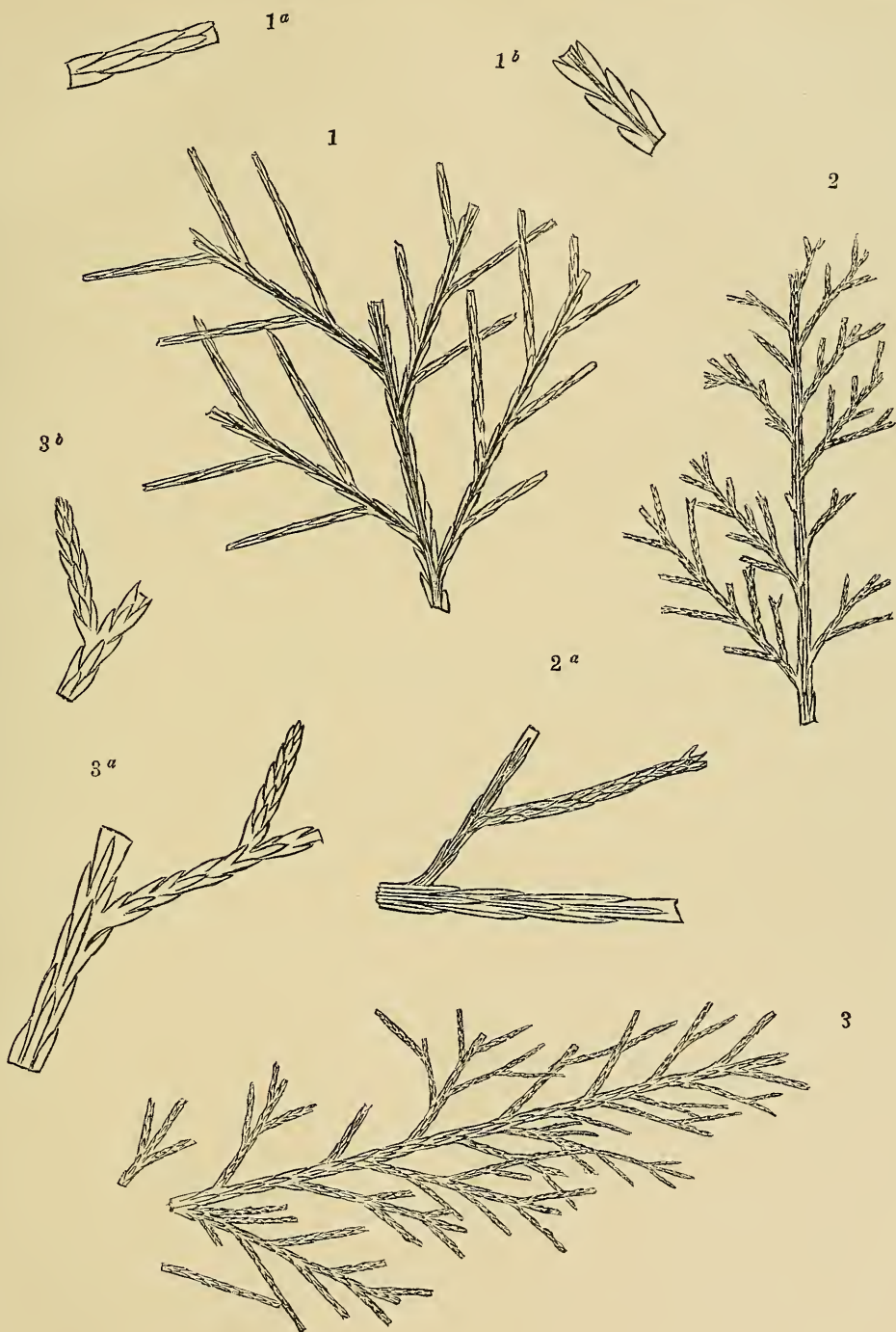


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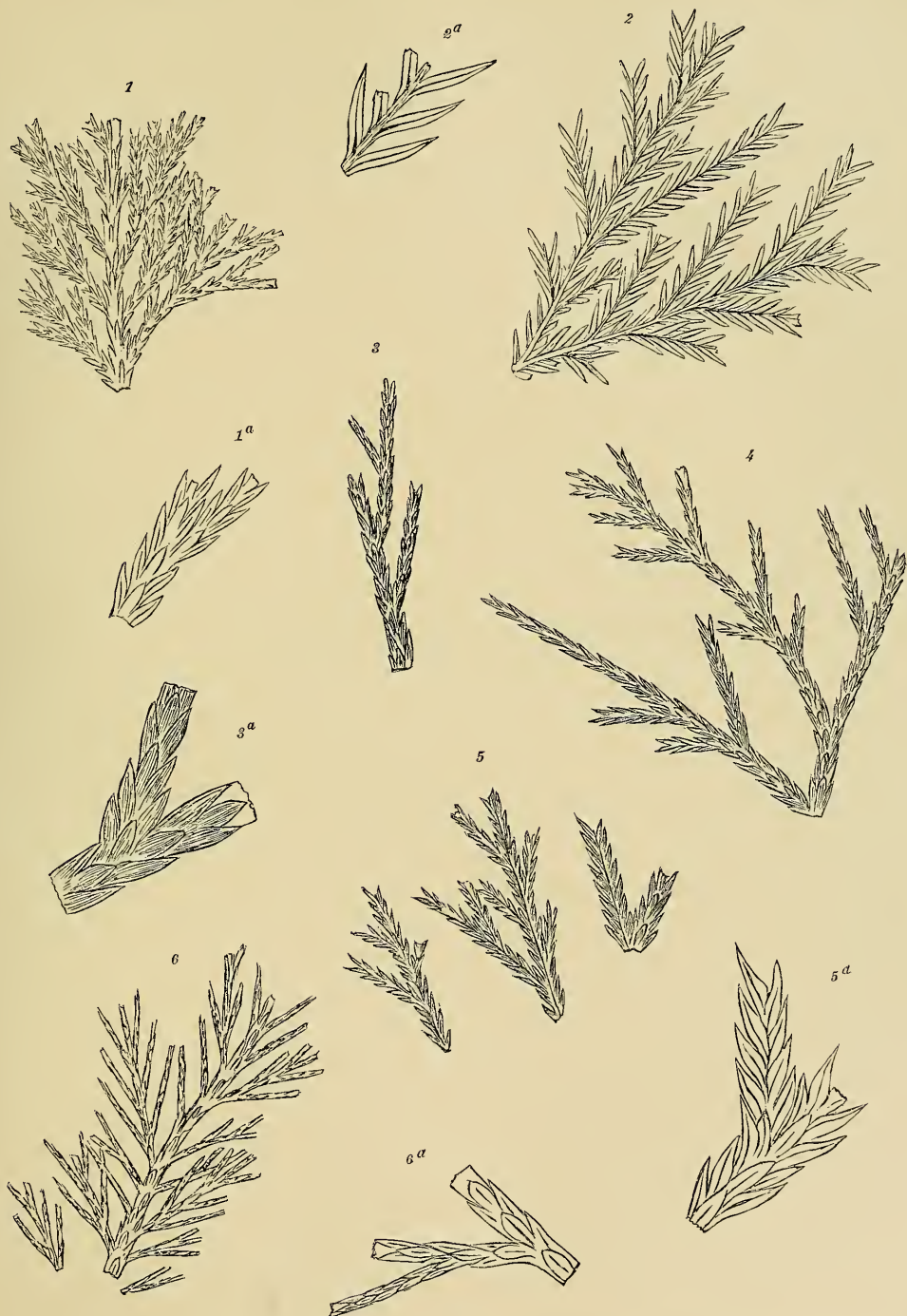


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1



2



4



3

2^a

a

5

5^a

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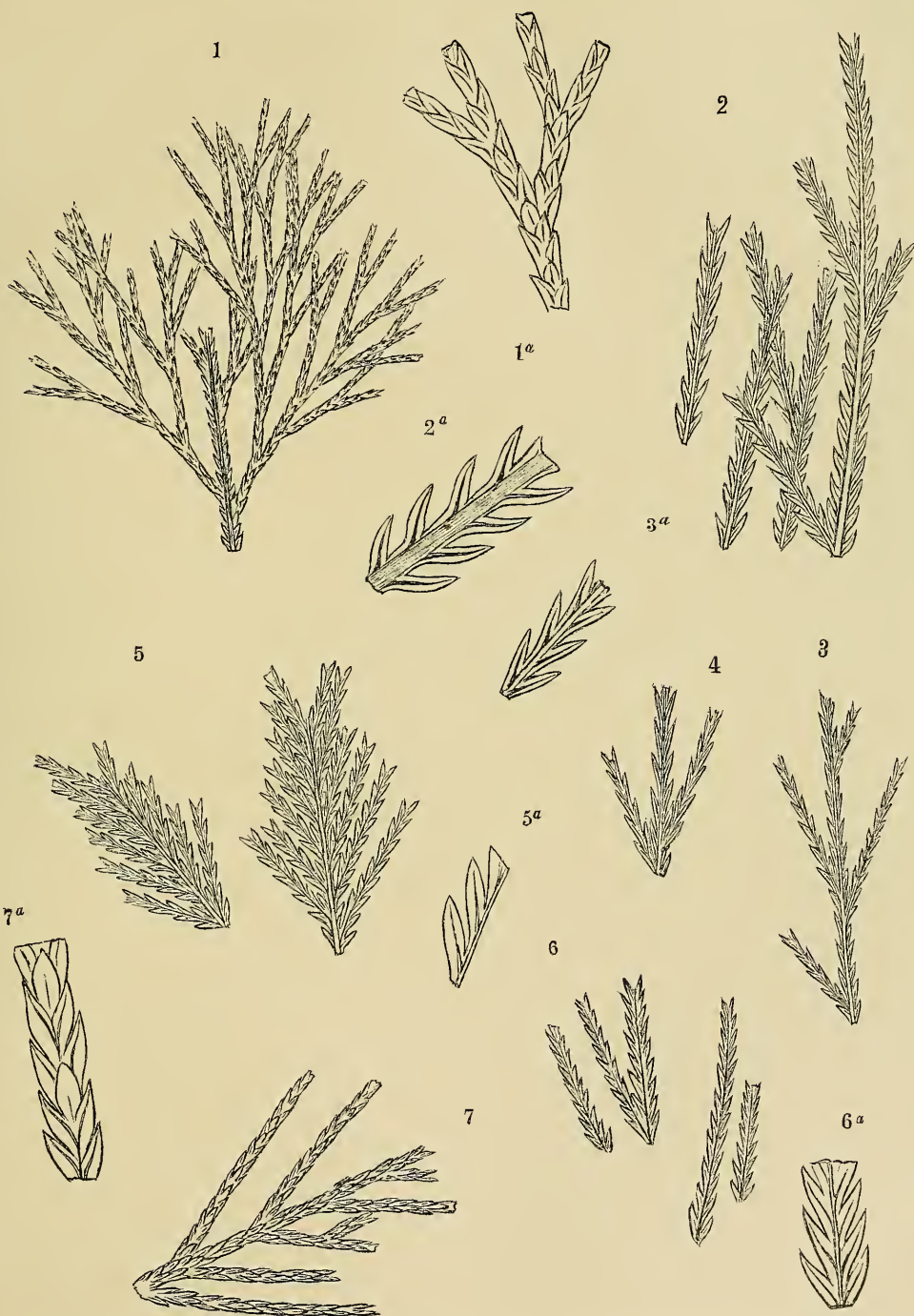


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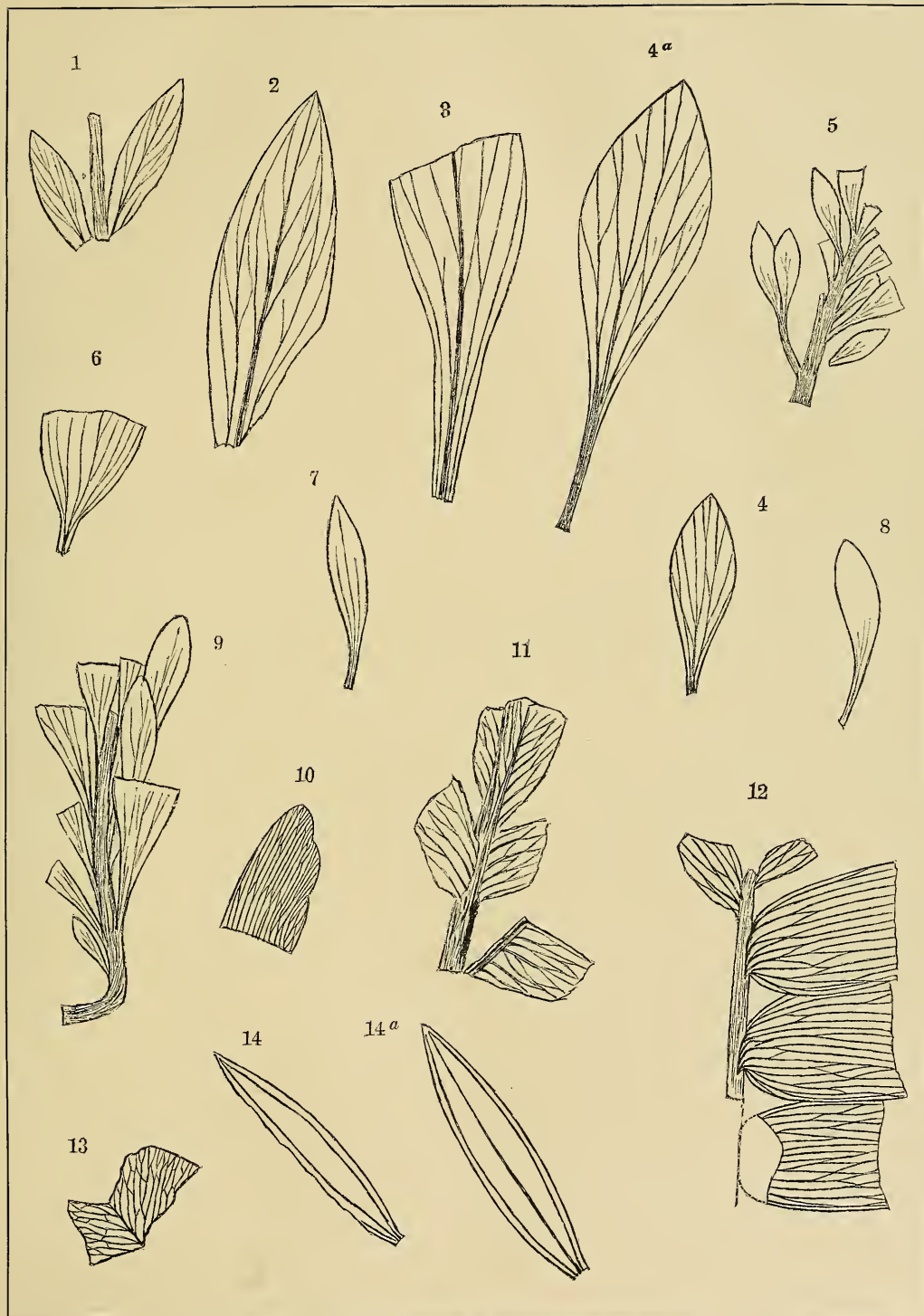


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1 ^a . Part of 1 magnified three diameters.....	285
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2. Upper part of a leaf.	292
2 ^a . Portion of 2 magnified three diameters.....	292

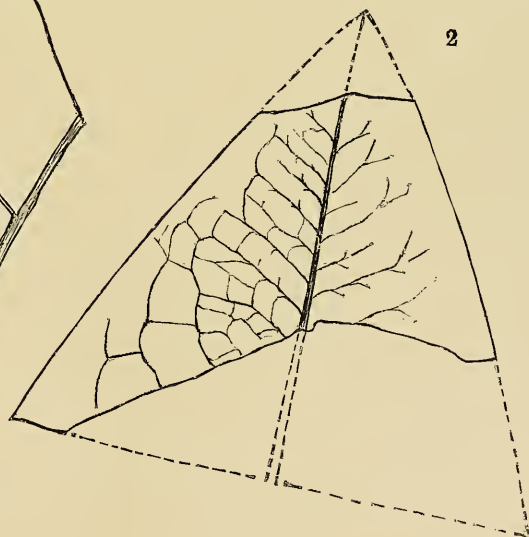
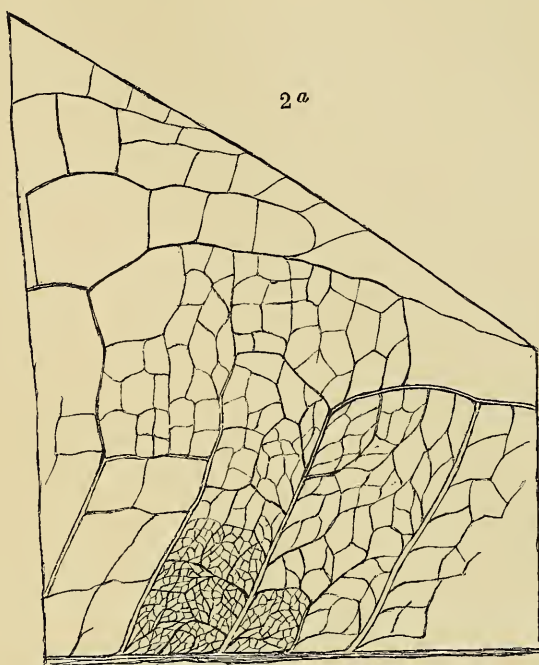
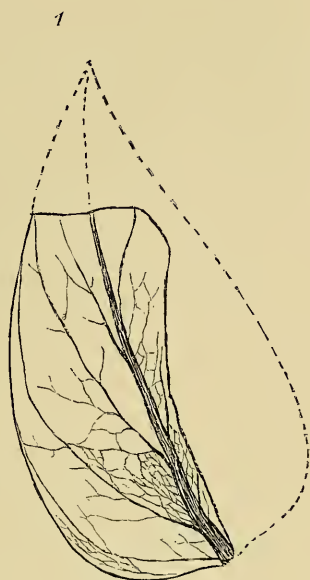


PLATE CXLII.

PLATE CXLII.

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1. Basal portion of a leaf.....	285
1 ^a . Portion of 1 magnified three diameters	285
2. Restoration of the leaf, as made out from various fragments.....	285

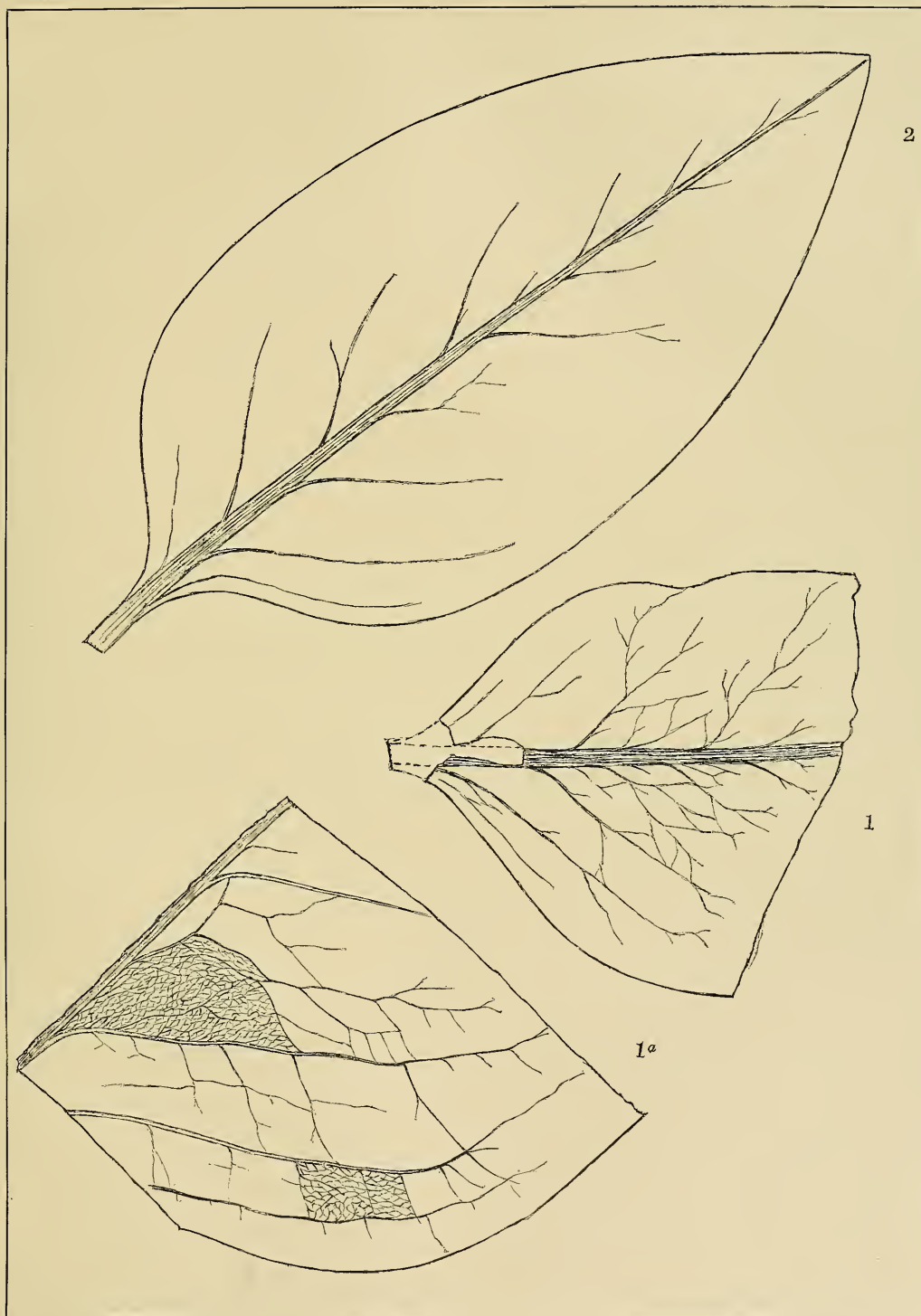
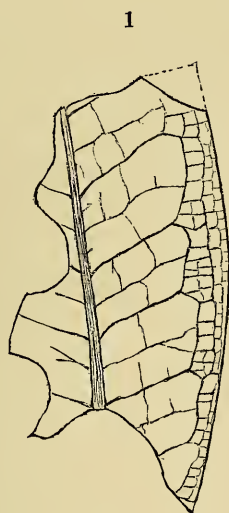


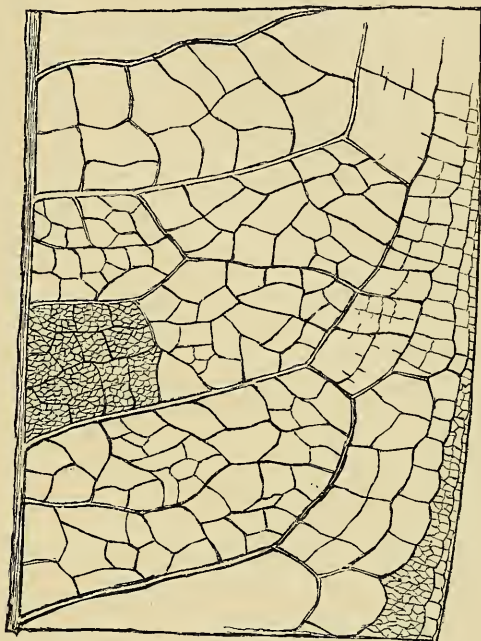
PLATE CXLIII.

PLATE CXLIII.

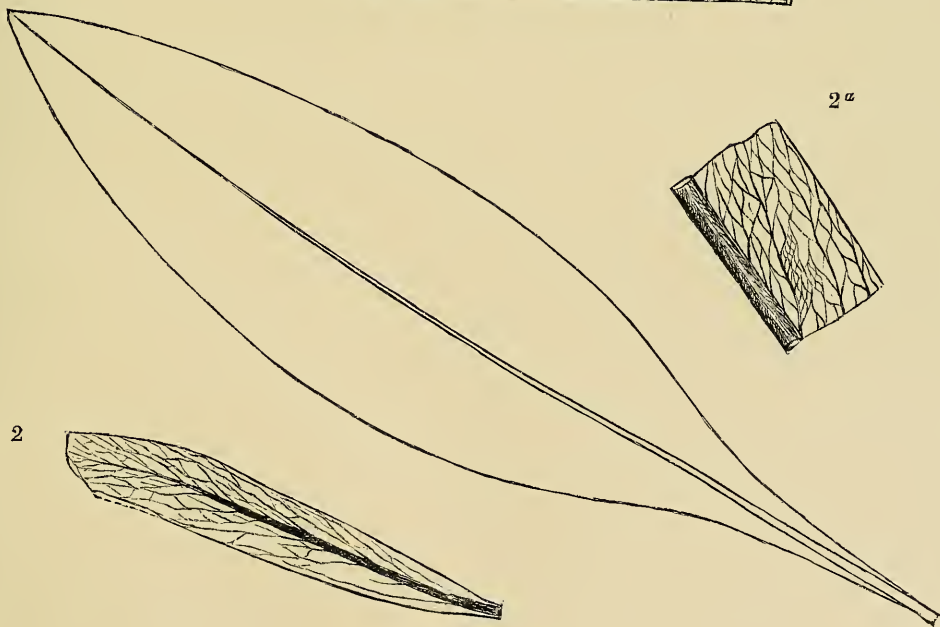
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FIGS. 1, 3. <i>FICUS VIRGINIENSIS</i> , sp. nov	295
1. Fragment of a leaf	295
1 ^a . Portion of 1 magnified three diameters	295
3. Restoration of the leaf as made out from various fragments	295
FIG. 2. <i>ROGERSIA ANGUSTIFOLIA</i> , sp. nov	283
2. Leaf nearly complete	288
2 ^a . Portion of 2 magnified three diameters	288



1^a



3



2

2^a

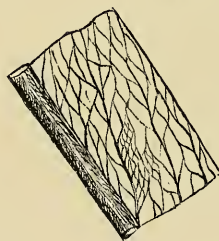


PLATE CXLIV.

PLATE CXLIV.

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1. Upper part of a leaf	295
1 ^a . Portion of 1 magnified three diameters.....	295
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2 ^a . Portion of 2 magnified three diameters.....	287
2 ^b . Portion of 2 magnified more than 2 ^a , to show the ultimate reticulation	287
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3. Upper portion of a large leaf	291

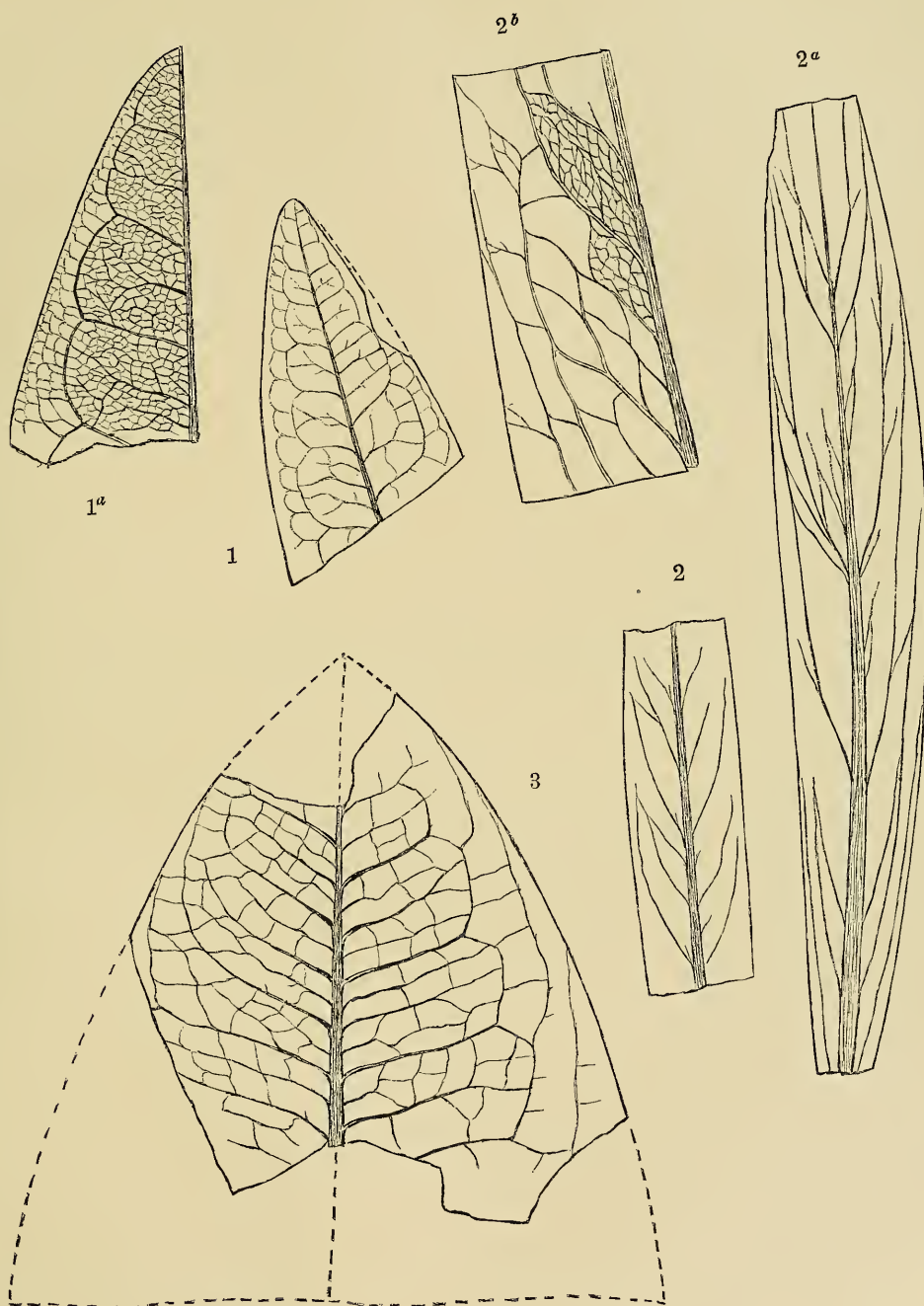
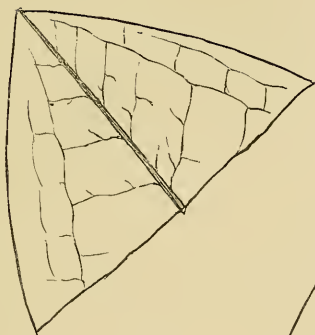


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PLATE CXLV.

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4. Restoration of <i>Ficophyllum tenuinerve</i> as made out from numerous fragments.....	292
FIG. 2. FICOPHYLLUM SERRATUM, sp. nov.....	294
2. Upper part of a leaf.....	294
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3. Fragment of a leaf of medium size	291

1



2



3



4

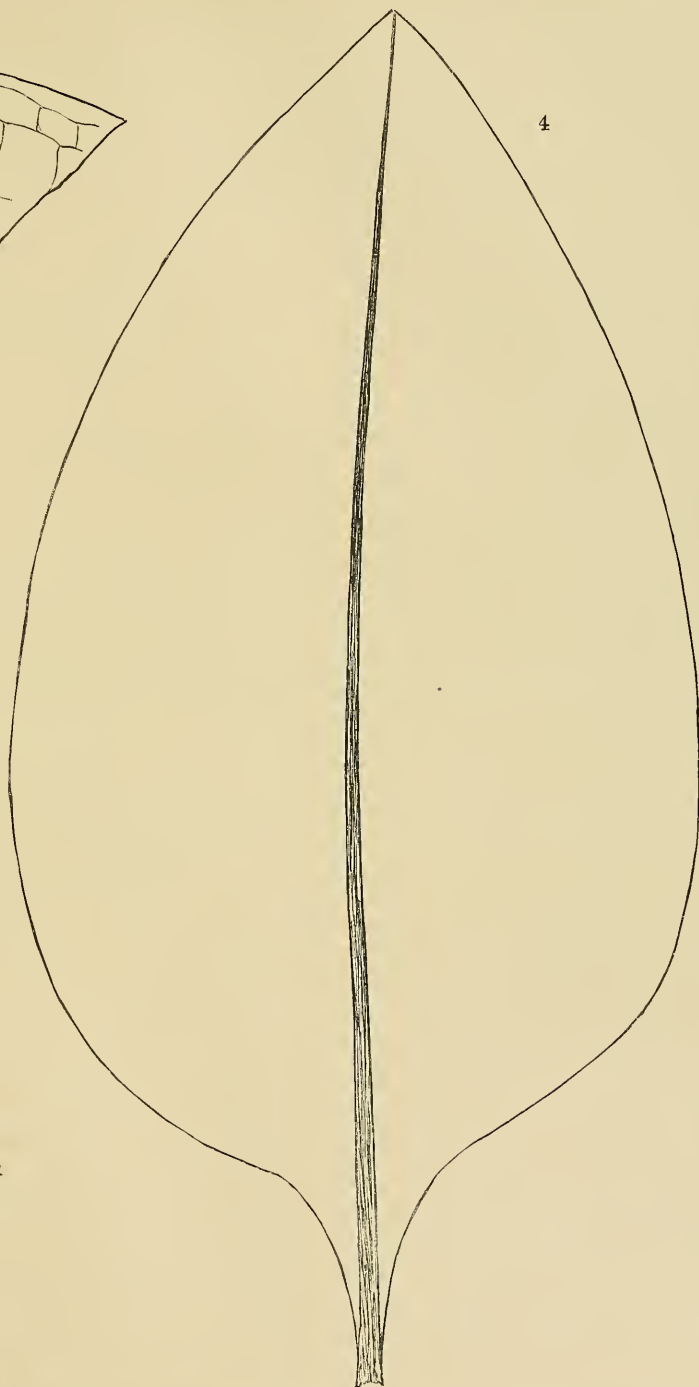
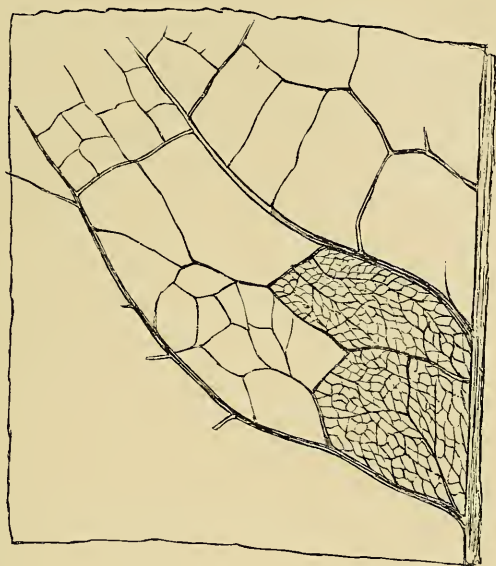


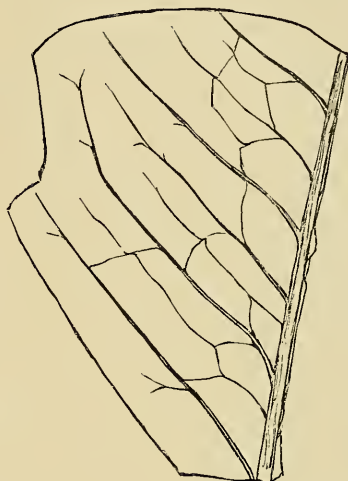
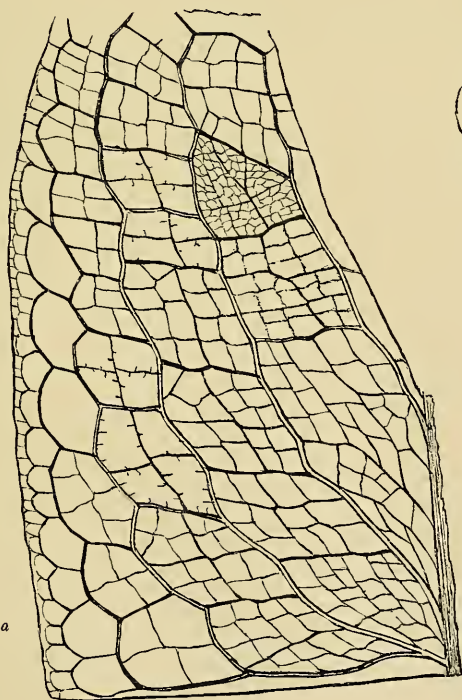
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PLATE CXLVI.

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1 ^a . Portion of 1 magnified three diameters.....	291
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3 ^a . Part of 3 magnified three diameters	304
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5. Nearly entire leaf	304



1

1^a3^a

2



5



4



3



PLATE CXLVII.

PLATE CXLVII.

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1. Nearly entire leaf	296
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2. Tip of a large leaf	292
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3. Middle portion of a leaf	297
3a. Part of 3 magnified three diameters	297
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4. Fragment of a very large leaf, natural size	291

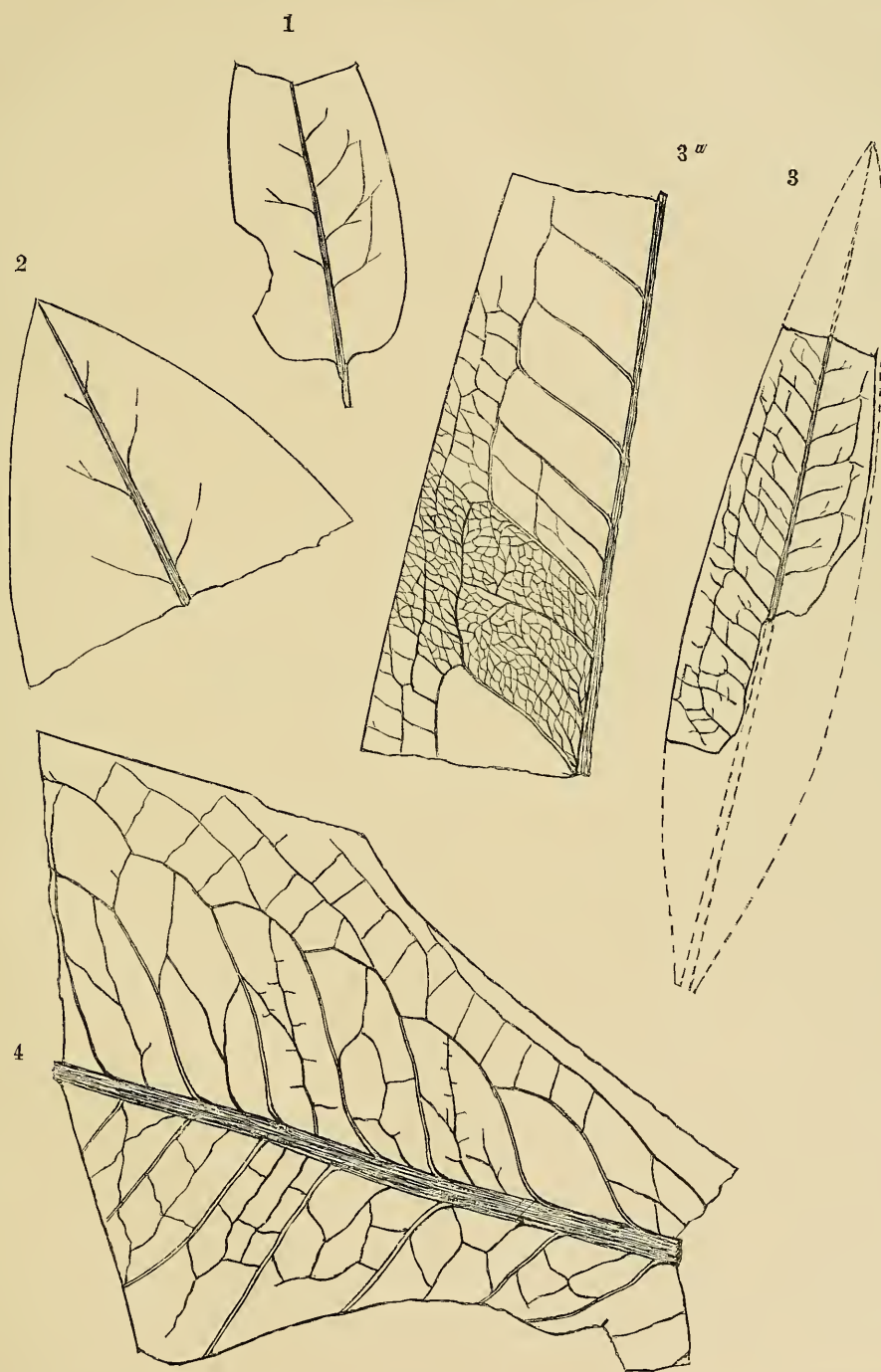


PLATE CXLVIII.

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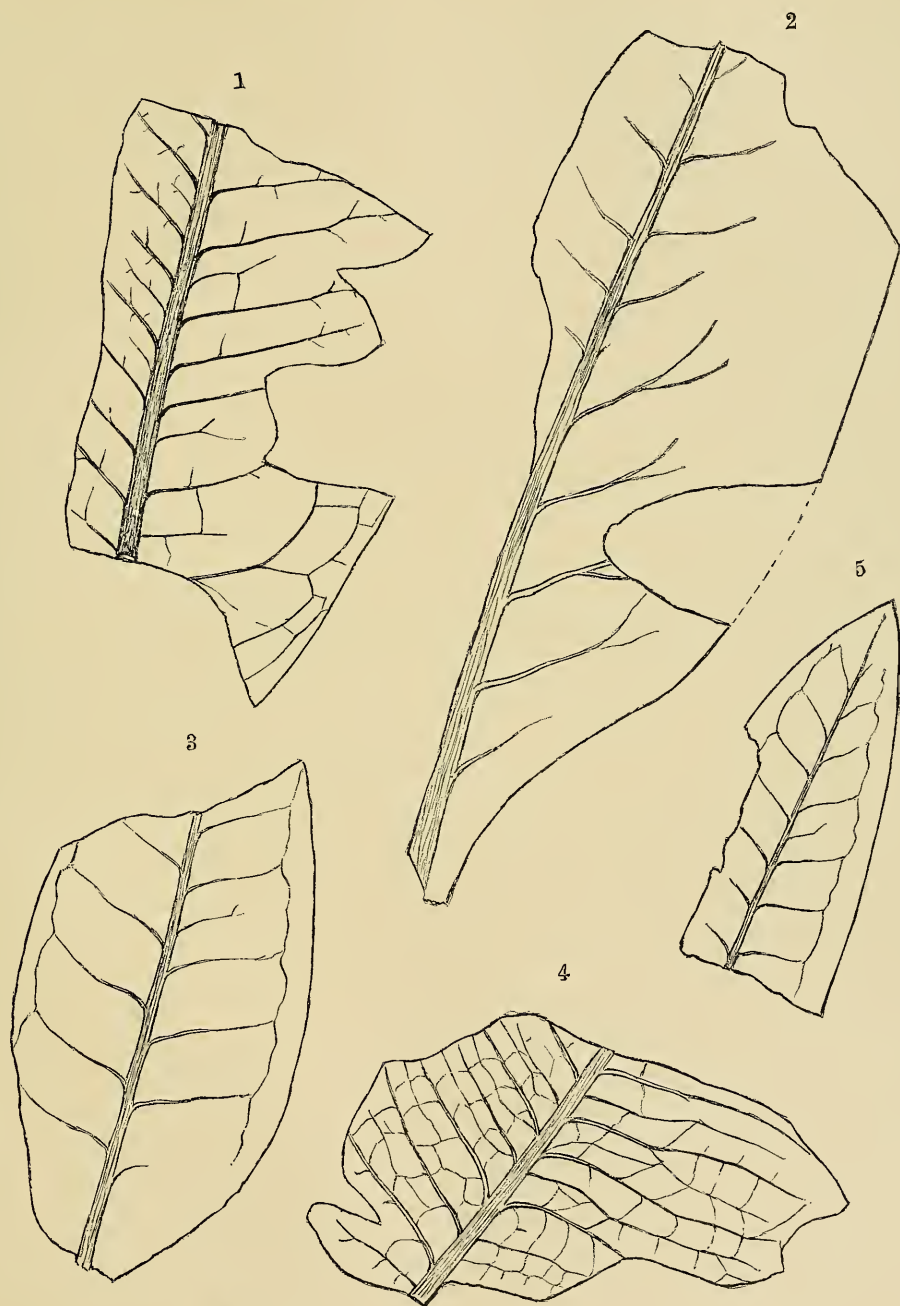


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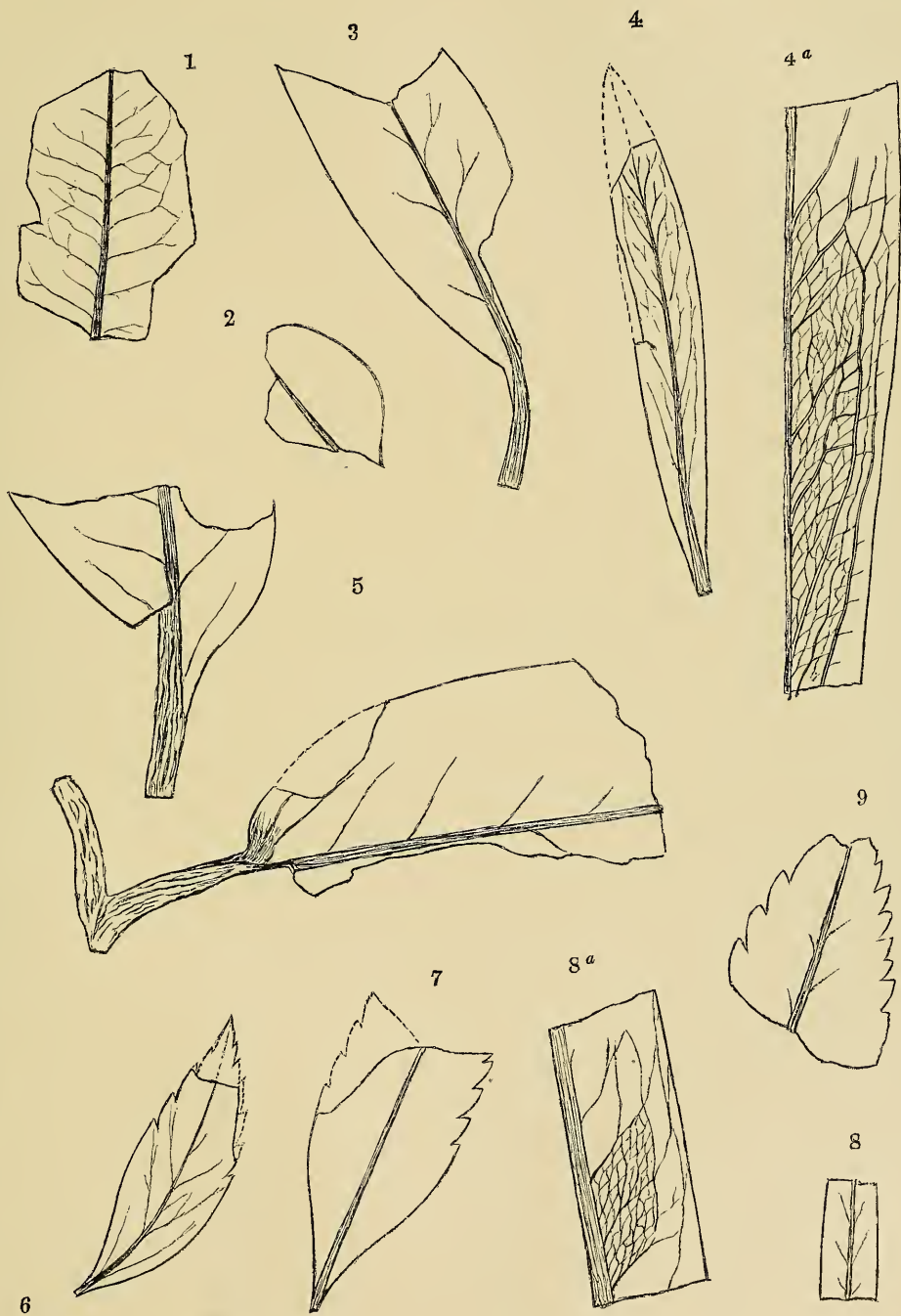


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1. Basal portion of an unusually large leaf.....	287
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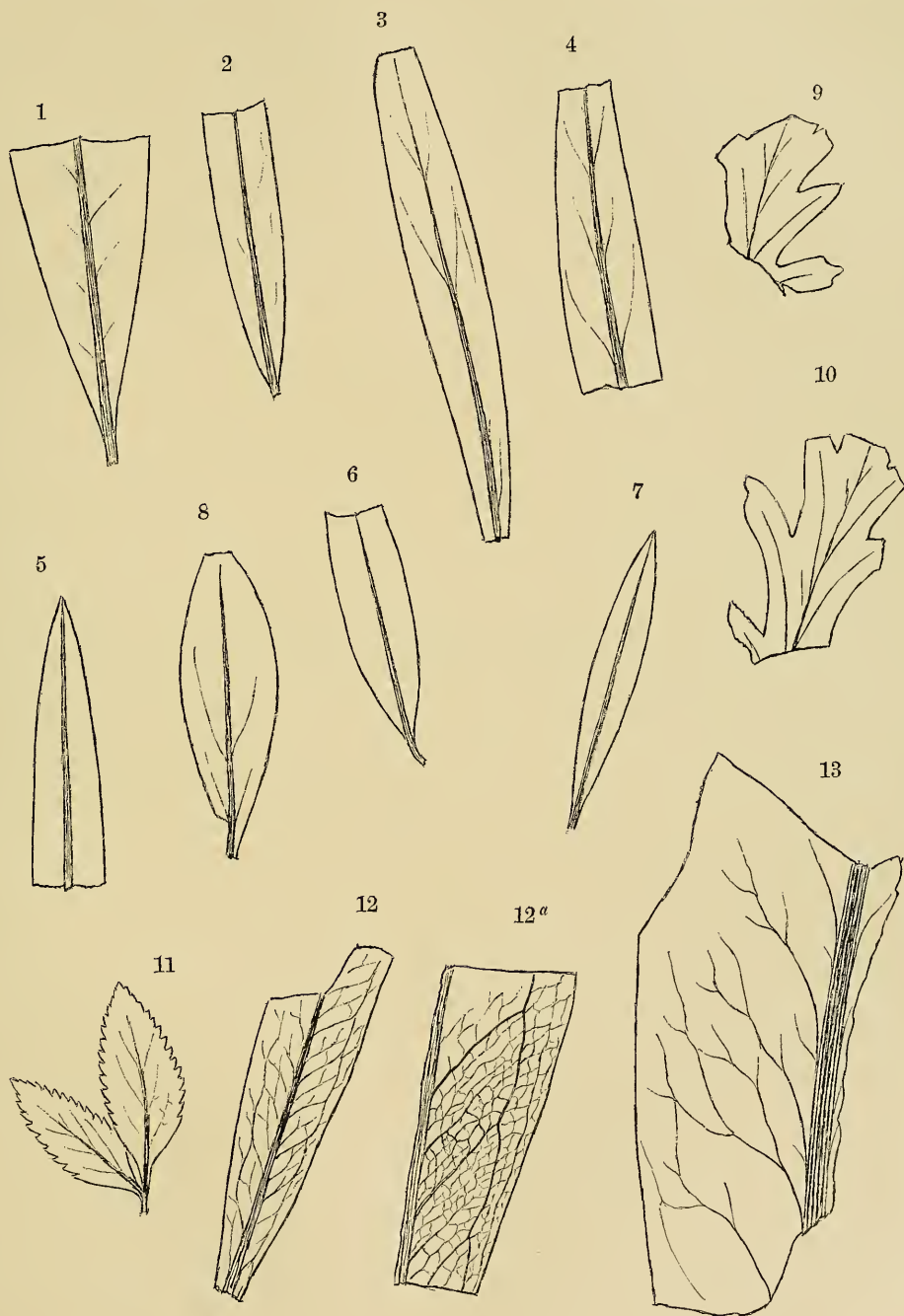
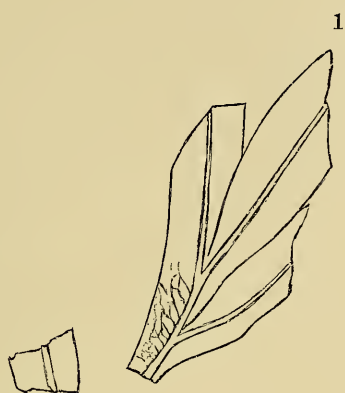
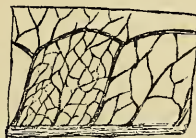


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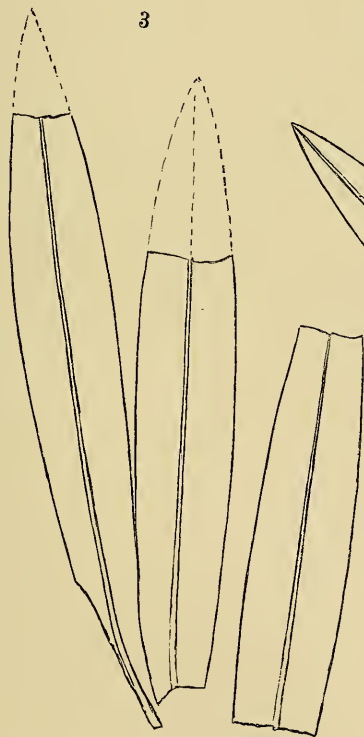
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1. Upper part of a compound leaf.....	298
1 ^a . Portion of 1 magnified to show nervation.....	298
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1^a

2



3



4

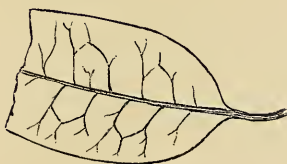


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FIG. 5. <i>SASSAFRAS CRETACEUM</i> Newb., var. <i>HETEROLOBUM</i>	289
5. Entire leaf	289

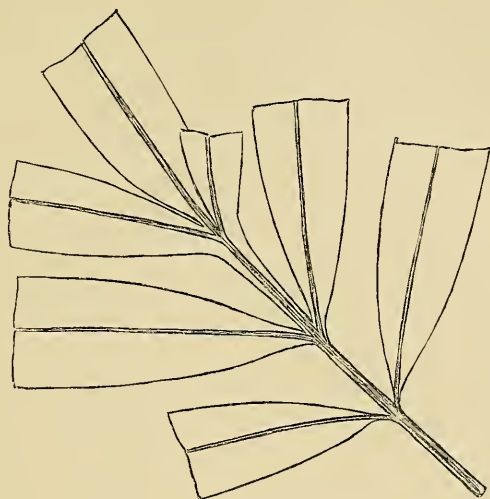


PLATE CLIII.

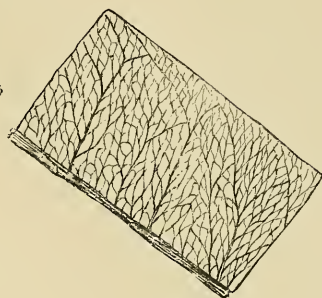
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1 ^a . Portion of the base of a leaflet magnified three diameters	301
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2. Upper part of a large compound leaf	297
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3. Fragment of a compound leaf	298
FIG. 4. <i>SAPINDOPSIS BREVIFOLIA</i> , sp. nov.	300
4. Summit of a compound leaf	300

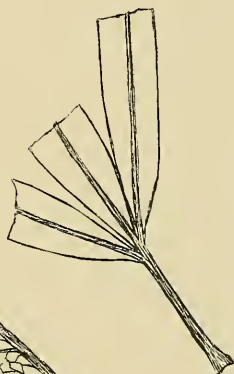
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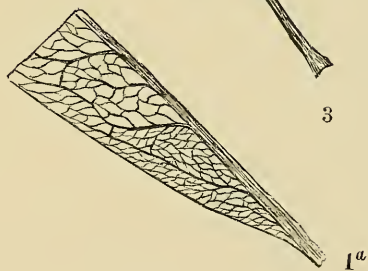
1^b



3



2



1^a

4



PLATE CLIV.

PLATE CLIV.

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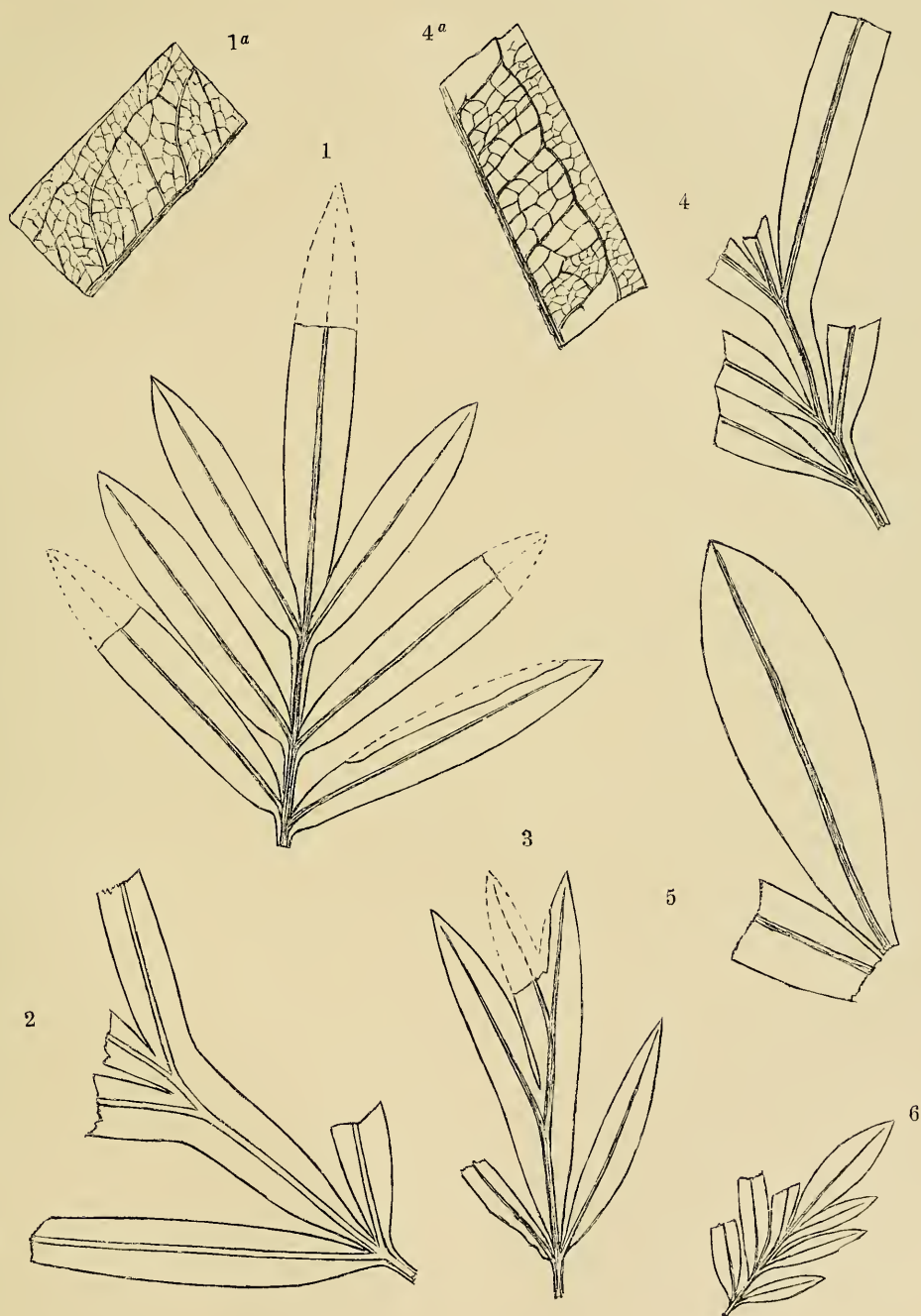


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PLATE CLV.

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9a. Portion of 9 magnified three diameters.	311

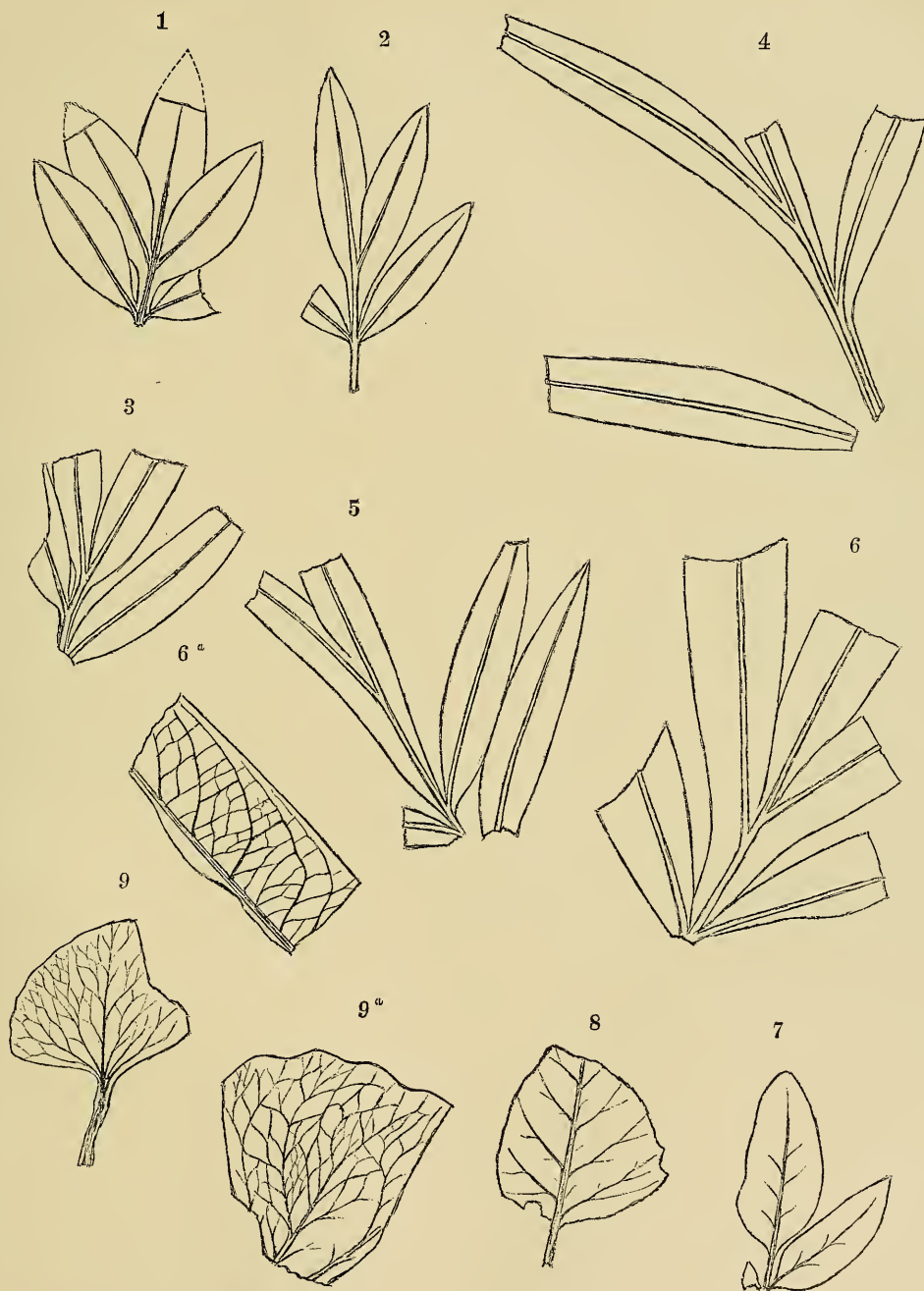


PLATE CLVI.

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2. Small fragment of a leaf.	286
FIG. 3. POPULOPHYLLUM RENIFORME, sp. nov.	311
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8 ^a . Portion of 8 magnified three diameters.	305
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10 ^a . Portion of 10 magnified three diameters.	310
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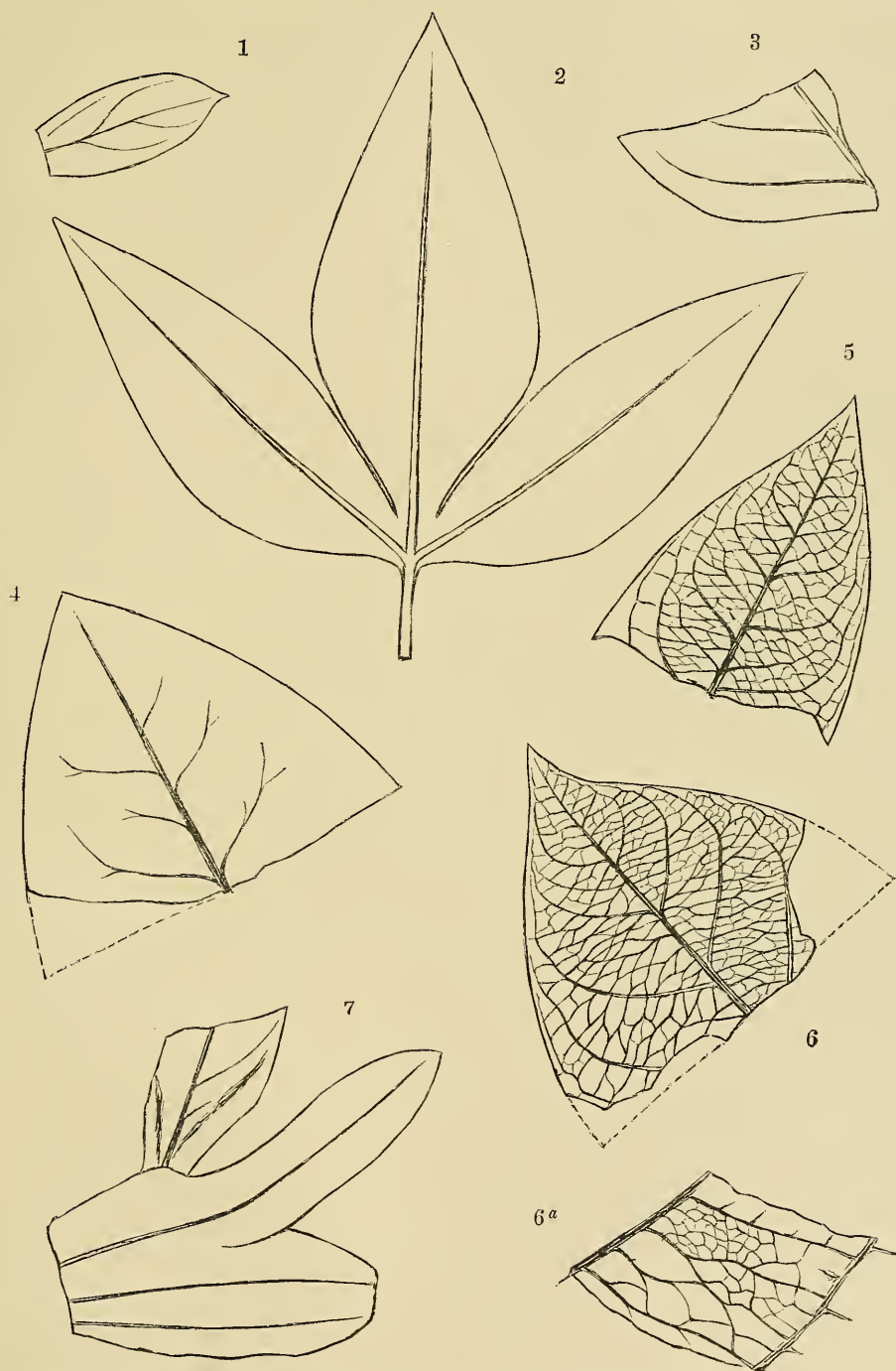


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PLATE CLVIII.

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PLATE CLIX.

PLATE CLIX.

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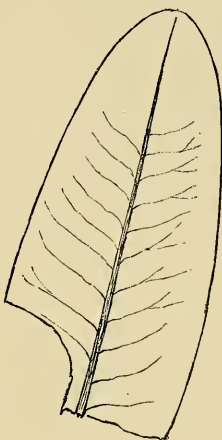
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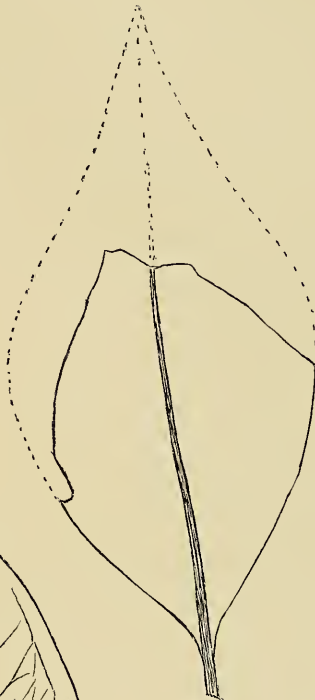
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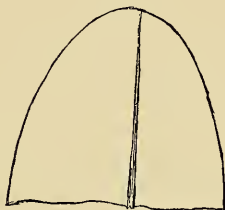
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7



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6



8



4



a



9



10

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PLATE CLX.

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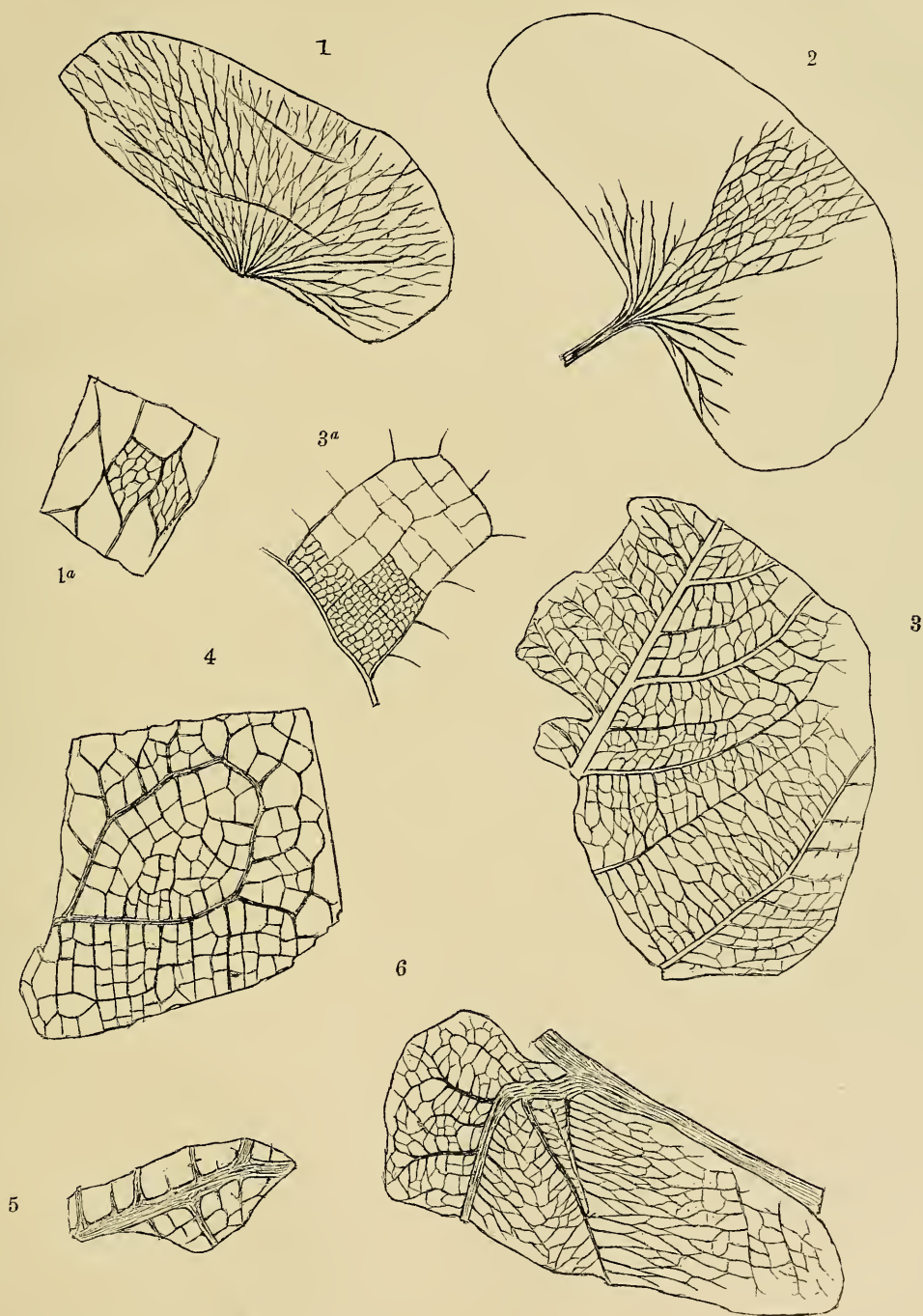


PLATE CLXI.

PLATE CLXI.

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1. Fragment of a leaf showing mainly the basal portion	321
1 ^a . Portion of 1 magnified three diameters.	321
2. Summit of a smaller leaf	321

2



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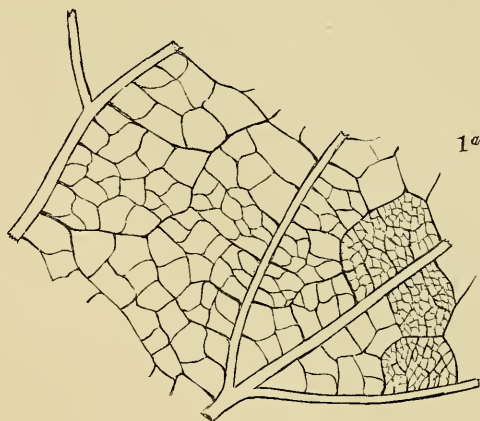
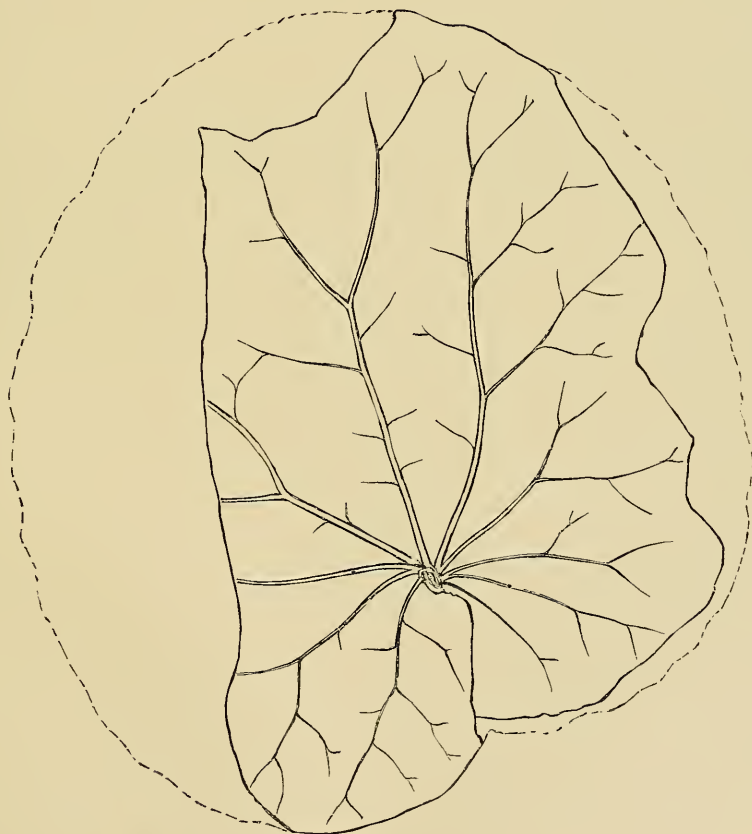
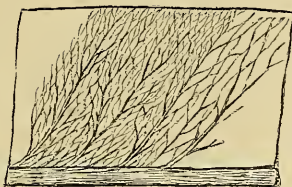
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PLATE CLXII.

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4. Fragment of a leaf	325
4a. Portion magnified to show nervation	325

4^a

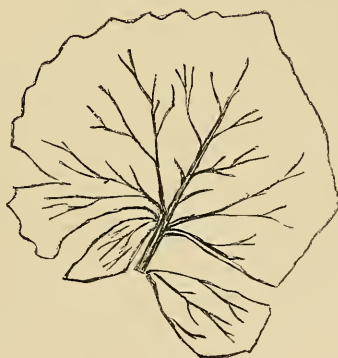
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PLATE CLXIII.

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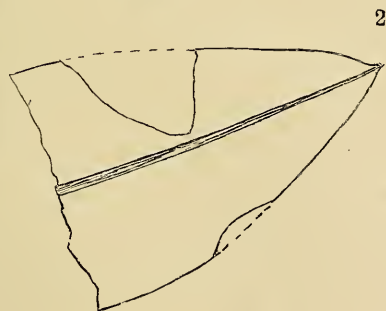
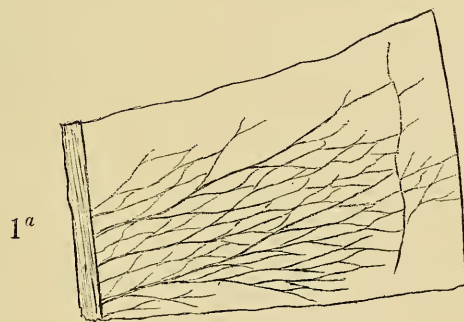


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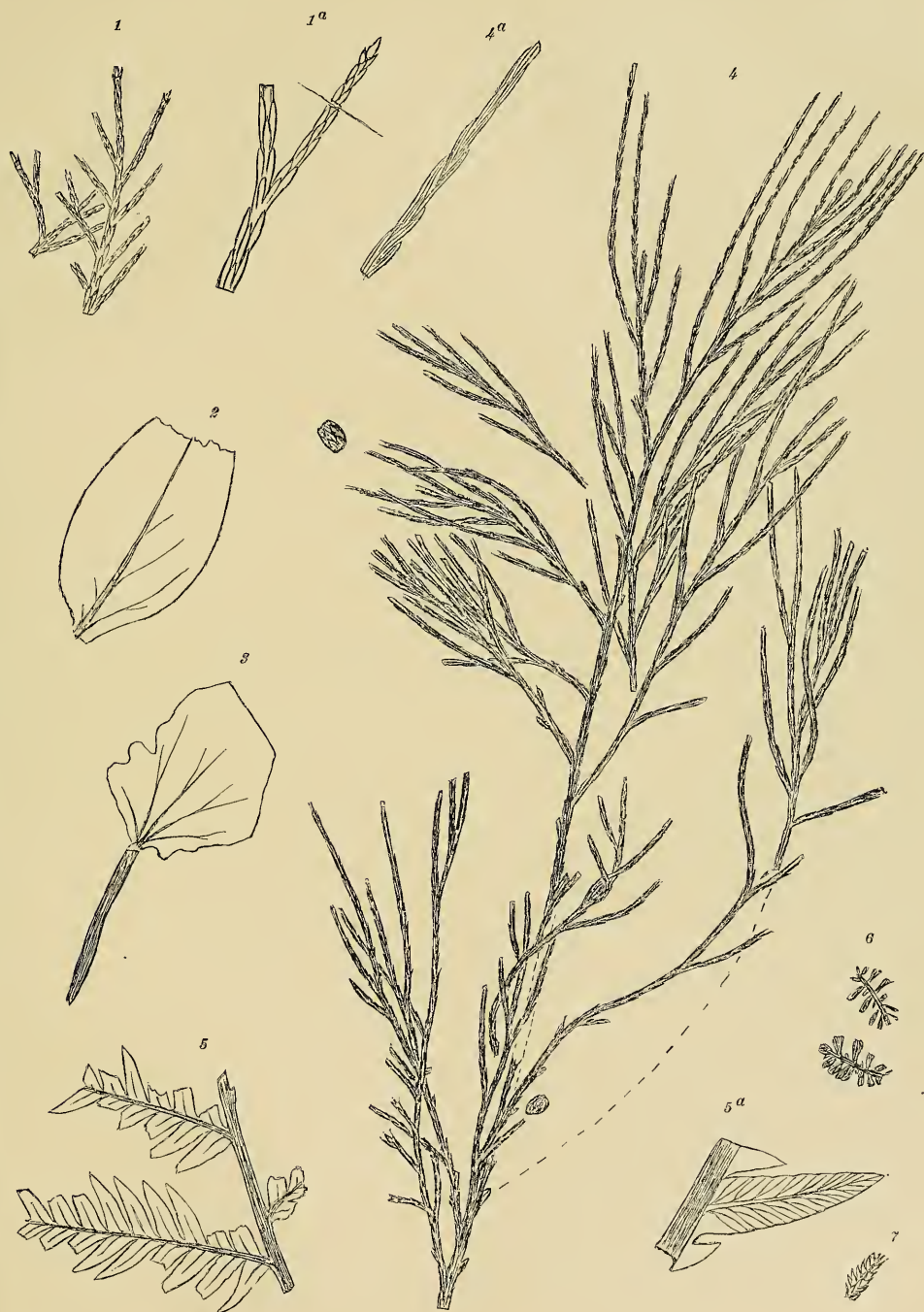


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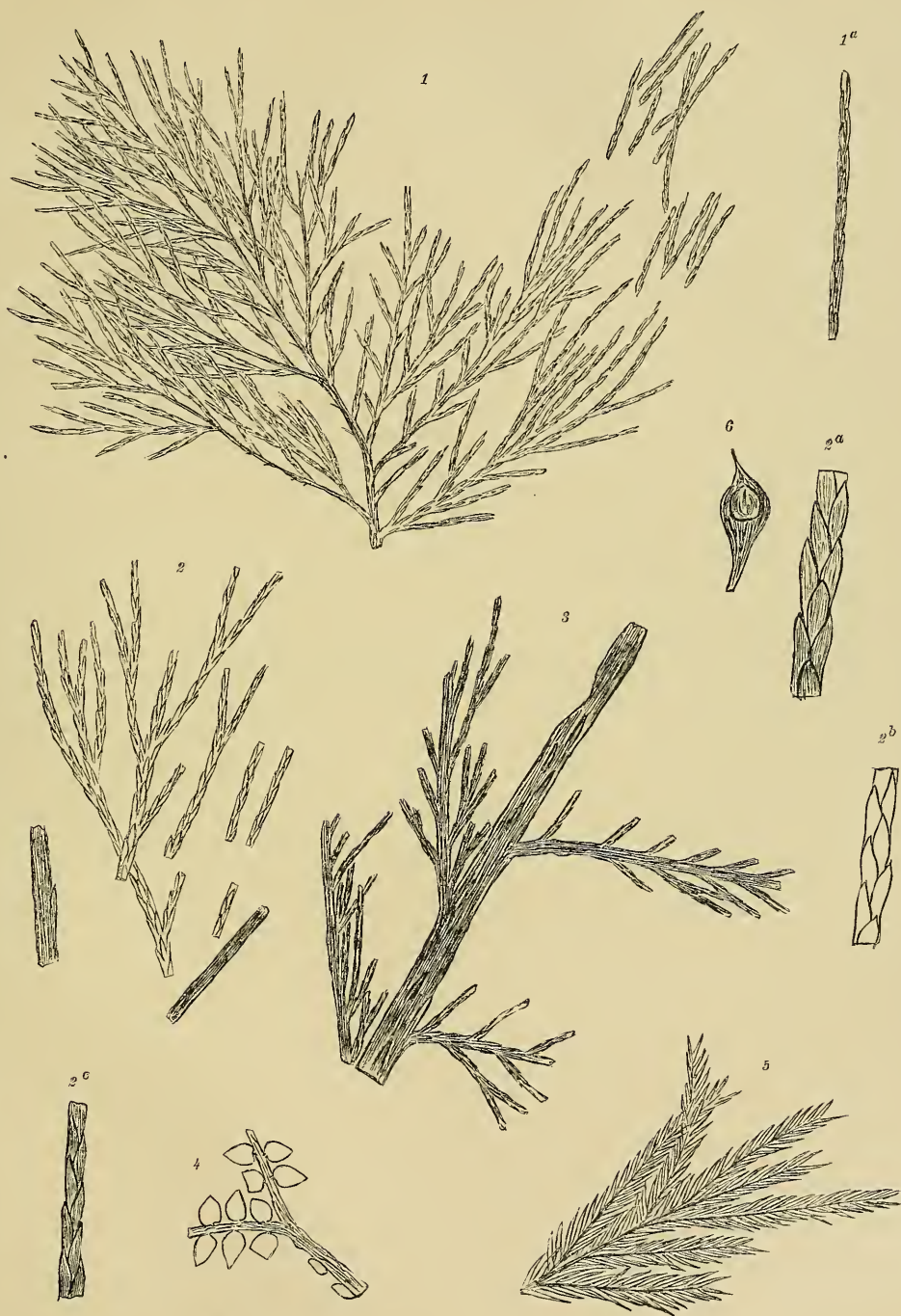


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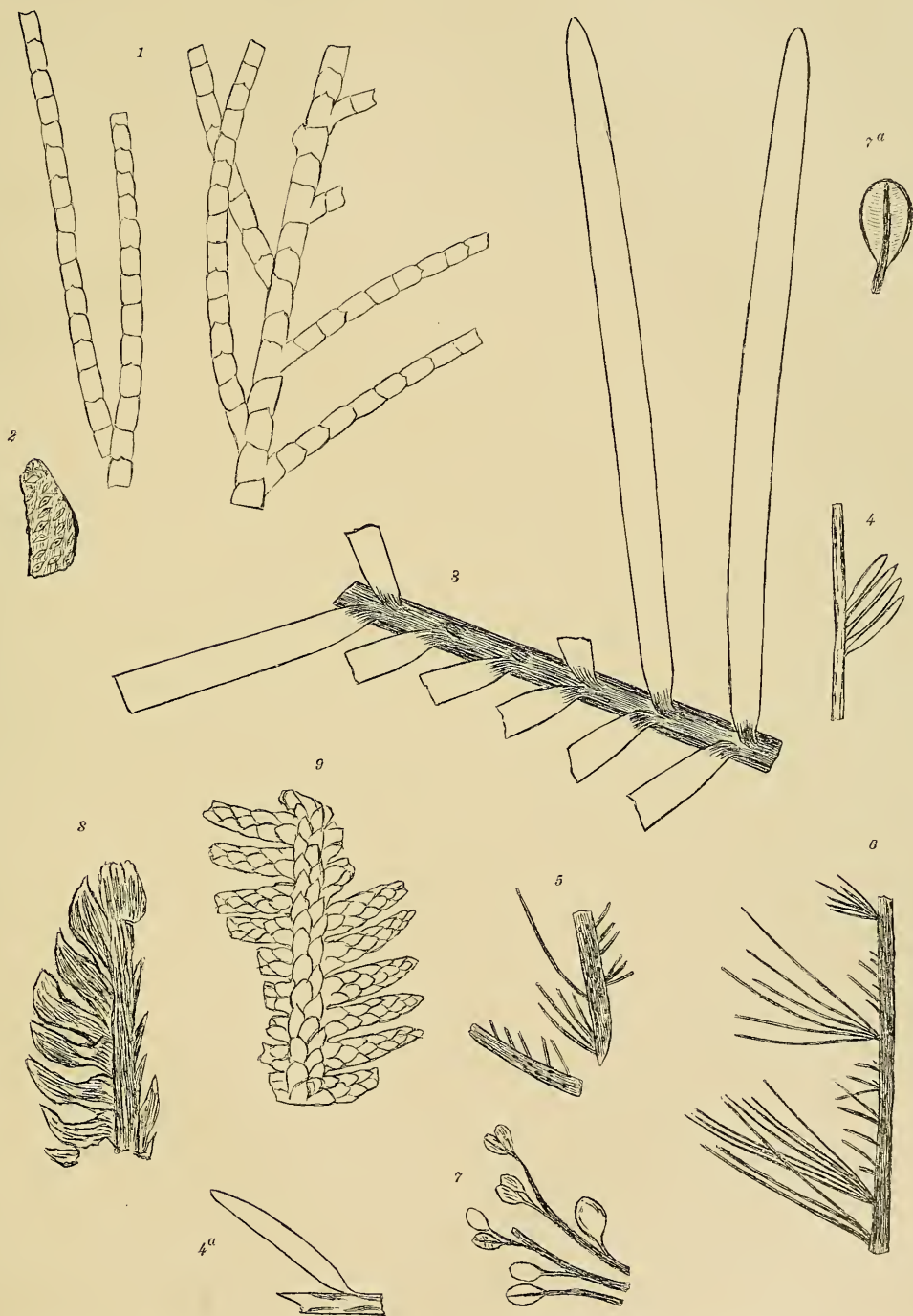


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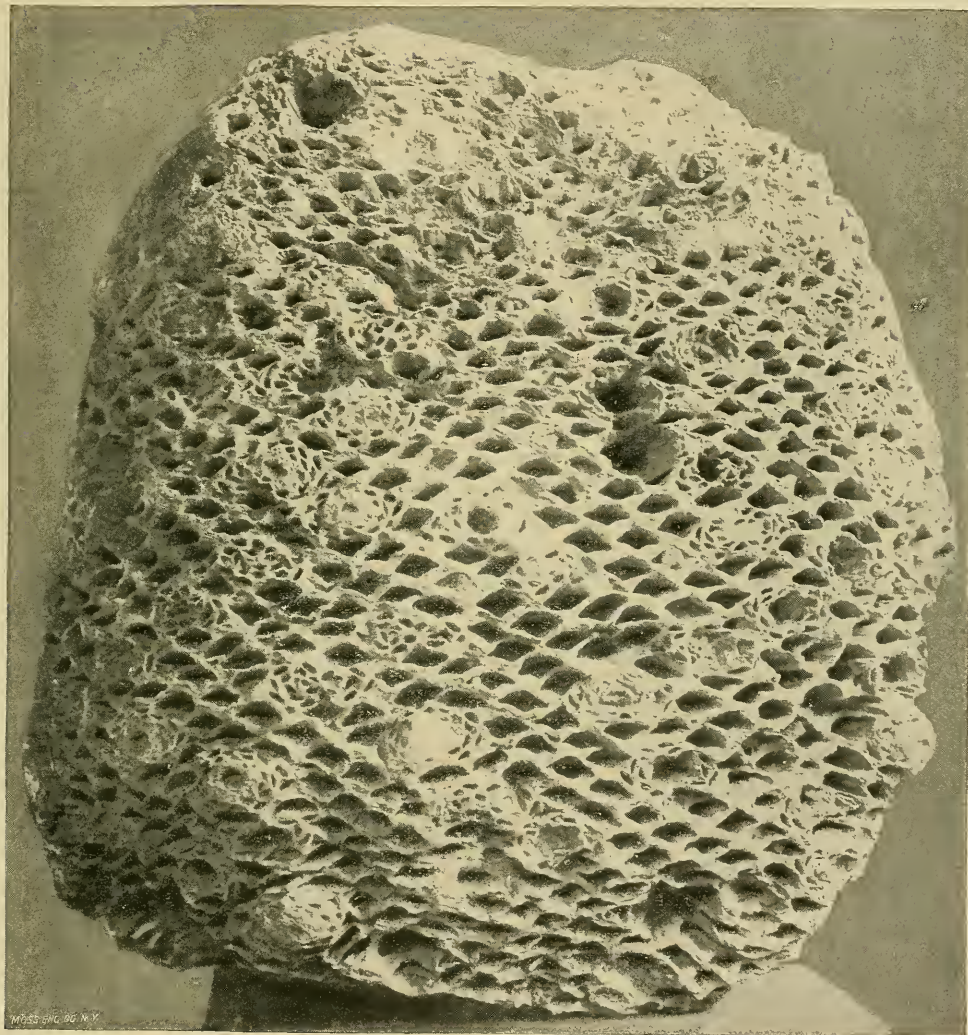


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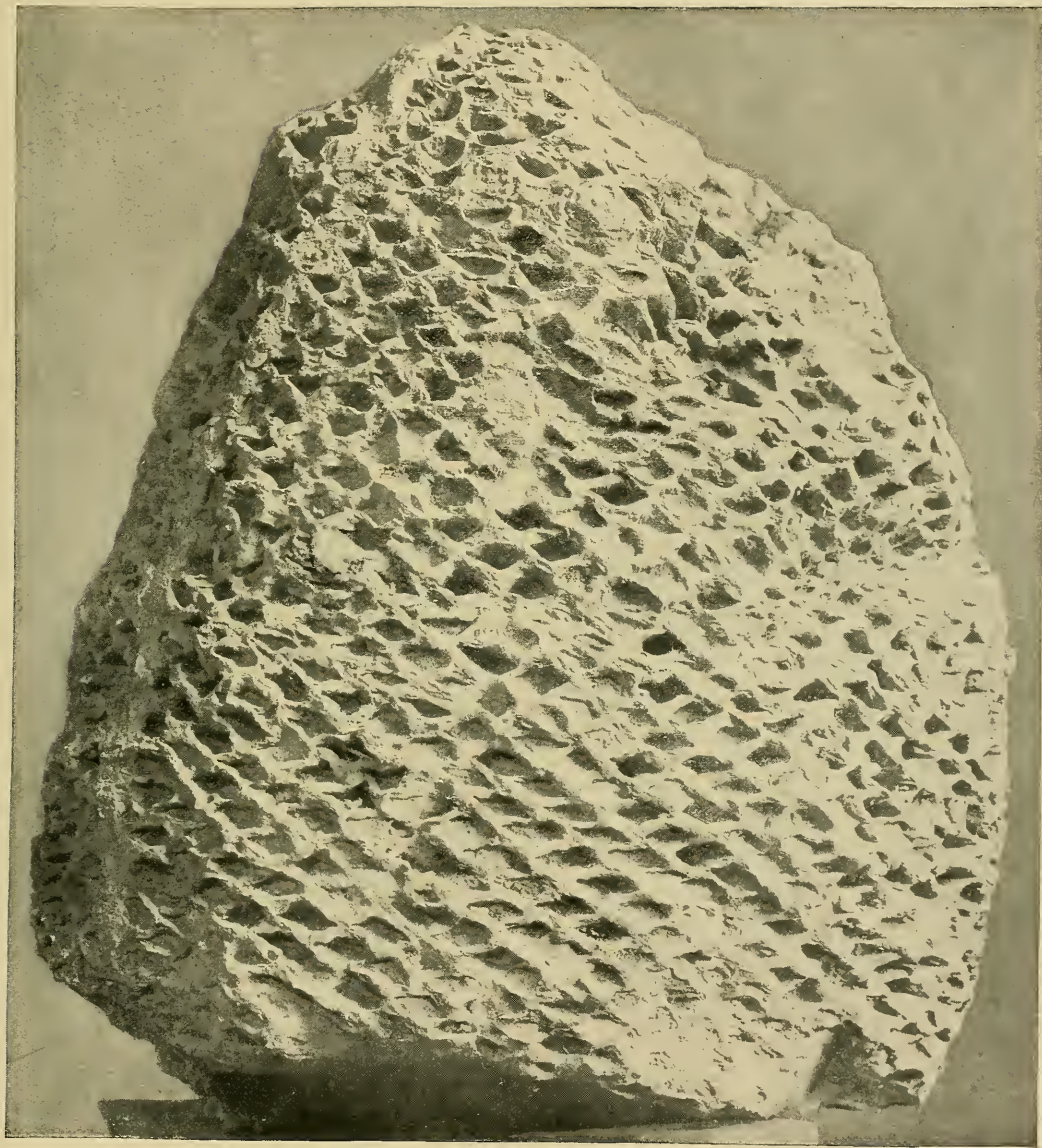


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